Do Liquidity Constraints Matter for New Entrepreneurs?

Kevin Moore*

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Abstract

Numerous studies have found a positive relationship between wealth and entering entrepreneurship, and interpret this as evidence of the existence of liquidity constraints. However, recent research has shown that the relationship between wealth and entering entrepreneurship may be non-linear and only significant for high-wealth households; this result cannot be interpreted as evidence of liquidity constraints. Using data from the SCF, we construct a proxy for wealth based on the household's home equity wealth at the time of the entrepreneurial decision. The results provide further evidence that the relationship between wealth and entering entrepreneurship is only significant for high-wealth households and that liquidity constraints do not appear to bind for the majority of new entrepreneurs. Possible explanations for the relationship between wealth and becoming an entrepreneur include lower risk aversion and differences in the types of businesses started by high-wealth households.

1. Introduction

A large literature exists of studies that attempt to determine what factors matter most in the decision to become an entrepreneur. One of the most generally accepted results is the positive relationship between wealth and the propensity to become an entrepreneur. This relationship is seen as evidence that potential entrepreneurs face liquidity constraints when starting a business. Due to imperfect capital markets, low wealth entrepreneurs may not be able to secure the capital necessary to start a business, or they may have to operate with a less than optimal amount of capital.[1]

Studies such as Evans and Jovanovic (1989), Evans and Leighton (1989), Fairlie (1999), Quadrini (1999), Gentry and Hubbard (2001), and Lel and Udell (2002) have shown that wealth or proxies for wealth matter in the entrepreneurial decision. However, Cressy (2000) and Hurst and Lusardi (2003) question the interpretation of this relationship as evidence of liquidity constraints. Cressy extends the Evans and Jovanovic model to include uncertainty and risk and finds that decreasing absolute risk aversion can explain the positive relationship between wealth and entrepreneurship. Hurst and Lusardi argue that the propensity to start a business is non-linear in wealth, and show that households in the top 5 percent of the wealth distribution are the driving force behind the positive relationship. They also argue that for the majority of households starting a business, the capital requirements are of such a size that liquidity constraints are not binding.

A key requirement to study the relationship between wealth and entrepreneurship is a measure of wealth that is exogenous to the entrepreneurial decision. The norm is to use panel data which contains information on wealth in the period prior to the start of the business. As numerous authors recognize, total household wealth from the prior period may not be an exogenous measure, since the characteristics that cause certain households to amass wealth may be similar to the characteristics that lead households to start a business. Plus, wealth from the prior period could be artificially high because the household has been saving specifically to fund a new business venture.

Holtz-Eakin, Joulfaian, and Rosen (1994) and Blanchflower and Oswald (1998) use the recent receipt of an inheritance as a way to deal with the potential endogeneity of wealth. The rationale is that if potential entrepreneurs face liquidity constraints, then the receipt of an inheritance should loosen the constraint and have a positive effect on the propensity to start a

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[1] Several empirical studies have examined issues related to the information asymmetries that exist when entrepreneurs attempt to obtain outside financing. Examples include Avery et al. (1998), Berger and Udell (1998) and Lel and Udell (2002). These studies show that personal commitments (collateral or guarantees) are an important device for obtaining outside financing.

business. Both studies find a strong positive effect for recent inheritances. While this approach has its merits, if a household expects the inheritance then the amount of the inheritance may be already thought of as part of household wealth. Thus, the positive relationship between receiving an inheritance and starting a business could be just a matter of timing. This casts some doubt on the use of inheritances as an exogenous measure of wealth.

As another attempt to circumvent the endogeneity of wealth, Hurst and Lusardi (2003) use the regional variation in house prices (purged of other economic effects) as an instrument for household wealth. Their rationale is that gains in housing wealth could be used by potential entrepreneurs to overcome liquidity constraints. They find an insignificant relationship between gains in house value and starting a business.

This paper further investigates the relationship between wealth and the entrepreneurial decision using data from the 1995, 1998, and 2001 Surveys of Consumer Finances (SCF). Although the SCF is a cross-sectional dataset, the detailed information available in the survey makes it possible to approximate the circumstances of the household at the time he decision was made to start the business. The detail of the data also allows us to construct a proxy for wealth that is less likely to be endogenous than most other measures – the value of home equity at the time the business was started.

To preview the results, we find that the relationship between wealth and entrepreneurship is non-linear and driven by high-wealth households. This finding suggests that while liquidity constraints certainly exist, they do not appear to bind for the majority of new entrepreneurs. The analysis shows that the initial investment in most businesses is relatively small and that many households have sufficient resources to fund the initial investment. Possible alternative explanations for the positive relationship between wealth and entrepreneurship include lower risk aversion among high-wealth households and differences in the types of businesses started by high-wealth households.

The next section of the paper provides more details on the data used in the analysis, while results from the analysis are presented in the third section. The fourth section tests the sensitivity of the results, the fifth section elaborates on the main results, and the last section contains concluding remarks.

2. Data

The data used in this paper are the 1995, 1998, and 2001 Surveys of Consumer Finances (SCF). The Board of Governors of the Federal Reserve System conducts this survey of household assets and liabilities on a triennial basis. Besides collecting information on assets and

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liabilities, the SCF collects information on household demographics, income, relationships with financial institutions, attitudes toward risk and credit, current and past employment, and pensions.

The SCF uses a dual frame sample design to improve coverage of all households in the United States. One part of the sample is an area probability sample derived from a national sampling frame, while the other part, the list sample, uses the IRS Statistics of Income Individual Taxpayer File to oversample high-wealth households. This dual frame design provides the SCF with coverage of assets widely held in the population, such as cars and houses, and assets narrowly held in the population, such as private businesses and bonds. Wealth data from the SCF are widely regarded as the most comprehensive data available for the United States.

Sample weights constructed for the SCF allow aggregation of estimates to the U.S. household population level in a given survey year. Missing values in the SCF are replaced using a multiple imputation technique.[2]

The main drawback of using the SCF is that it is not a panel data set. Thus, we do not actually observe individuals transitioning into entrepreneurship. However, due to the detail of the SCF data, we can approximate the circumstances of the household at the time of the entrepreneurial decision. To make this "roll back" more realistic, we limit our sample to households that have made the entrepreneurial decision in the last three years.[3] The three year window provides a sample that contains some very new entrants who may have only just started a business in the last year, and some "seasoned" entrepreneurs who have been in business for up to three years.[4] The sample also includes employees with zero to three years of tenure at their current job. Since the three-year limit reduces the sample size considerably in any one year of the SCF, we pool the 1995, 1998, and 2001 surveys. The pooling of the data also allows us to consider entrepreneurial decisions that occur over a nine-year span, mitigating the effects of only focusing on transitions in a single year. Other sample restrictions include limiting the sample to male household heads ages 25 to 64 who are currently working.

Many possible definitions of entrepreneurship are possible with the SCF data. One possibility is to equate self-employment with entrepreneurship. In the SCF, self-employment status is derived from a question asking whether the household head works for himself or someone else. Another possibility is to classify the household by the presence of an actively managed business. In our case, any actively managed business started or acquired by the

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[2] Kennickell (1998a) discusses the list sample design, Kennickell (1991, 1998b) discusses the multiple imputation technique, and Kennickell and Woodburn (1999) and Kennickell (1999) discuss the weighting methodology used in the SCF.

[3] This restriction is also used by Lel and Udell (2002).

[4] Quadrini (1999) finds that the exit rate for entrepreneurs declines substantially after three or more years of entrepreneurial tenure.

household head in the last three years would qualify the household as an entrepreneur.[5] One issue with this definition is that a household may have other businesses they started or acquired prior to the last three years. These households are not really "new" entrepreneurs, since they already have a surviving business. Thus, a third possible definition is to only consider households in which all actively managed businesses were started or acquired by the household head in the last three years. Table 1 shows the percentage of entrepreneurs in the sample under the various definitions. The self-reported measure has the lowest rate in all the survey years, while the measure that allows households that started a business in the last three years to have additional older businesses has the highest rate. Our preferred measure is households that started a business in the last three years and have no prior businesses; this definition has rates somewhat between the other two definitions. We refer to these households as new entrepreneurs.

This definition is appealing for a number of reasons. Since these new entrepreneurs do not have an existing prior business, there is less of a selection issue. Households with businesses older than three years who decide to open another business are likely to be more successful than new entrepreneurs. Plus, these experienced entrepreneurs have a positive track record that may make it easier for them to obtain external financing. We want to focus on the first business venture by a household, since that is when any liquidity constraints are most likely to bind.[6] As discussed in more detail in the section on the sensitivity checks, the results do not vary much across the definitions of entrepreneurship.

The richness of the SCF data allows us to construct various measures of household wealth and to control for many of the covariates that influence the entrepreneurial decision. We focus on four main definitions of wealth - net worth, non-business net worth, liquid assets, and home equity. Net worth is defined as the difference between assets and liabilities. Assets include checking, savings, money market, and call accounts, certificates of deposit, mutual funds, stocks, bonds, retirement accounts (IRAs/Keoghs, 401(k)s, etc.), trusts, annuities, managed investment accounts, the cash value of life insurance, vehicles, primary residences, other real estate, businesses, and other miscellaneous assets. Liabilities include loans secured by the primary residence or other real estate, installment loans, credit card balances, other lines of credit, and miscellaneous debts.[7] Non-business net worth is defined as net worth minus the equity value of

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[5] We omit businesses the household received via inheritance or businesses the household become a partner in through a promotion. Note that these two categories only account for about 5 percent of all actively managed businesses reported in the sample used in the analysis.

[6] Data limitations do not allow us to completely rule out that a new entrepreneur had a prior business that failed or was sold off. However, only about 6 percent of new entrepreneurs report that they were self-employed on their longest past job.

[7] For more details on the definition of net worth, see Aizcorbe, Kennickell, and Moore (2003).

all actively managed businesses, while liquid assets are defined as the sum of checking, savings, money market, and call accounts. All three of these measures of wealth are valued as of the year of the survey, which is not necessarily the same as the year of the entrepreneurial decision. This difference in timing makes all three of these measures likely to be endogenous. Clearly, net worth is endogenous, since it contains the value of the business, but the other two measures could also include assets that were affected by the financial returns from the business.

Even with the detailed SCF data, it is impossible to roll back all of the elements in each of the first three wealth definitions. However, it is possible to roll back the value of the primary residence and the value of any debt secured by the primary residence. For households who purchased their current home prior to the year they started a business or started their current job, the home equity value is likely to be a better estimate of the resources available to the household at the time of the entrepreneurial decision than measures of wealth from the year of the survey.[8] We compute this rolled back home equity amount by deflating the reported house value by the Office of Federal Housing Enterprise Oversight (OFHEO) house price index to the year of the entrepreneurial decision. The OFHEO house price index is matched to households at the MSA level, but for households outside an MSA, the state level house price index is used. Any loans secured by the home are also rolled back to the year of the decision by using the information on the terms of the loans. The difference between the rolled back house value and the rolled back amount outstanding on any loans secured by the home is the home equity value for that household.

Using the home equity value as a proxy for wealth is similar to the use of regional price variation in housing by Hurst and Lusardi (2003). However, Hurst and Lusardi assume that all of the gains in house value are accessible to the household, while we calculate the actual amount of home equity available to potentially fund the business.

Since we are rolling back the value of wealth to the year of the entrepreneurial decision, we should also roll back as many of the other covariates as possible. It is possible to adjust the experience level, marital status, number of children, whether the spouse/partner works, the state level unemployment rate, and whether the household received an inheritance within five years of the entrepreneurial decision. Other covariates that assumed to be the same as at the time of entrepreneurial decision are the education level, race, and health of the household head, as well as the industry of work, region of residence, problems with credit and expectations of an inheritance.

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[8] Households that purchased their home after they started a business or their current job (in the three-year window) are excluded from the sample. These households only account for 5 percent of the total number of households that started a business or a job in the last three years in the data.

Of the covariates assumed to be "fixed", the industry of work variable is probably the most questionable. To combat this problem, very broad industry classifications are used.

Table 2 provides means of various variables for workers and new entrepreneurs. Variables that have been rolled back are noted with an asterisk. As many other studies have shown, entrepreneurs have higher mean income and wealth, are slightly older and more educated, and are more likely to be of white non-Hispanic race. Note that even for these new entrepreneurs, the mean value of all actively managed businesses is over $150,000.[9] Clearly, even after only three years (at most), the business is large component of net worth. The mean rolled back value of home equity is about twice as large for entrepreneurs, even though the homeownership rate is about 30 percent higher. Notice that the mean cost basis of the business is slightly less than the mean home equity amount for entrepreneurs. This indicates that sufficient funds exist to finance the mean entrepreneurial venture. Furthermore, this result also holds when comparing the median home equity and the median cost basis of the business.

The high risk preference variable in Table 2 provides evidence that entrepreneurs are more willing to take substantial or above average risks when making investing decisions than non-entrepreneurs, while the variable indicating past self-employment experience shows current entrepreneurs are slightly more likely to have previous self-employment experience.[10] While nearly the same fraction of both groups received an inheritance within five years of the entrepreneurial decision, the amount of the inheritance was larger for non-entrepreneurs. Entrepreneurs are spread across the five industry classifications, but have a lower proportion in manufacturing and wholesale / retail trade than non-entrepreneurs. This may be because those industries involve a higher level of initial capital. In terms of occupations, two-thirds of entrepreneurs are in manager / professional / technical / sales occupations, compared to less than half of non-entrepreneurs. The estimates in Table 2 show substantial differences between entrepreneurs and non-entrepreneurs.

3. Regression Results

As a first pass at the regression analysis, we estimate probit models for the entrepreneurial decision using four different definitions of wealth. The first specification uses the level of wealth as a covariate, which implicitly assumes a linear relationship between wealth and the entrepreneurial decision. Table 3 presents the results from the probit models, where the

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[9] The median value of actively managed businesses is about $30,000, while median net worth for entrepreneurs is $122,000.
[10] Other possible risk preferences include taking average risks and no risks when making investment decisions.

dependent variable is equal to one if the household is classified as a new entrepreneur.[11] Note that the coefficients reported in Table 3 are the marginal effects, which have been adjusted for multiple imputation. The first column of results uses the broadest definition of wealth, net worth. While the coefficient on net worth is positive and significant, the effect is not very large. A $100,000 increase in net worth leads to only a one-half percentage point increase in the probability of starting a business. A similar result is found for the non-business net wealth measure, with the marginal effect even smaller. The third column of results reveals a positive, but insignificant effect for on the liquid asset measure of wealth.

While the first three measures of net worth are likely to be endogenous since they are values from the survey year and not the year of the entrepreneurial decision, the home equity measure in the fourth column should be a cleaner proxy for wealth or liquidity. The home equity value is considered a better measure of wealth because the home was purchased prior to the entrepreneurial decision; therefore the value is unaffected by any gains in wealth due to the business.[12] Results for this measure show a positive and significant coefficient, with a much larger marginal effect than the other measures. For a $100,000 increase in the home equity value, the probability of starting a businesses increases by 2.6 percentage points. Of course, a $100,000 increase in home equity is quite large, but even a $50,000 increase would have a larger effect on the propensity to start a business than the other wealth measures.

In terms of the other covariates in the probit models, the results are almost identical across the different wealth measures. Being a renter has a negative effect on entering entrepreneurship, while higher education levels have a strong positive effect. Labor force experience has a positive, but decreasing effect on starting a business, while working in the manufacturing or wholesale / retail trade industry has a negative effect. As many other studies have found, white non-Hispanics are significantly more likely to enter entrepreneurship. Results for the variable measuring the household's attitude toward risk show a strong positive relationship between being willing to take high risks and starting a business. This result holds regardless of the measure of wealth. The positive and significant effect of the state unemployment rate indicates that some households are "pushed" into entrepreneurship due to a lack of employment opportunities. This result is somewhat surprising given the low unemployment rate over most of the decision period (1993-2001).

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[11] A household is considered a new entrepreneur if they started an actively managed business in the last three years and the household has no additional actively managed businesses more than three years old.
[12] It is possible that households paid down their home-secured debt prior to starting the business to increase the amount of home equity available, since home equity loans and lines of credit have tax advantages over other types of consumer debt. Also, if bankruptcy laws in the state allow a large or unlimited homestead exemption, then paying off home-secured debt is a method for shielding assets in case the business fails.

Households that received an inheritance within the five-year period before the entrepreneurial decision are significantly less likely to start a business. While this result seems to contradict studies by Holtz-Eakin, Joulfaian, and Rosen (1994) and Blanchflower and Oswald (1998), the difference is likely due to methodological differences. Holtz-Eakin, Joulfaian, and Rosen focus on existing entrepreneurs and whether the receipt of an inheritance effects their survival. This is a different decision than the decision to enter entrepreneurship. Although Blanchflower and Oswald study the entry decision, they do not restrict the receipt of inheritances to within a five-year period prior of the entrepreneurial decision or include any other measure of wealth in their model. Blanchflower and Oswald also use British data in their analysis, so the results may not be directly comparable. Since we include a measure of wealth in our models, the receipt of inheritance dummy should only be reflecting the effect of the inheritance, sans any wealth effects. Furthermore, we also exclude from the sample entrepreneurs who inherited their business, which will lower the incidence of inheritance among entrepreneurs.

Although the results of the probit models with wealth entered linearly show a positive and significant relationship, the next step is to test this relationship when wealth is entered non-linearly. We construct dummy variables representing the first quartile, second quartile, third quartile, 75th to 95th percentiles, and top 5 percent of the distribution for each wealth measure. Table 4 presents the results of the probit models, where the dependent variable is one if the household is a new entrepreneur.

The results for the net worth measure of wealth show a positive and significant effect across all parts of the net worth distribution.[13] Compared to the first quartile, the propensity to start a business increases monotonically as one moves up the net worth distribution. A similar result is found for the non-business net worth measure, but the magnitude of the effect is smaller. For the liquid assets measure, a positive and significant effect is only found above the second quartile. Although the results for the first three wealth measures showed significant effects across the majority of the distribution, the home equity measure is only significant for households above the 75th percentile of the home equity distribution. Given that the first three wealth measures are more likely to be endogenous, the result for the home equity measure seems to confirm the findings of Hurst and Lusardi (2003). The relationship between wealth and entrepreneurship appears to be driven by these high-wealth households.

This finding does not lend much support for the interpretation of the positive relationship between wealth and starting a business as evidence of the existence of liquidity constraints. It

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[13] Results for most of the other covariates are similar to the probit models were wealth is entered linearly. The exception is the race variable, which is less likely to be significant.

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seems that while liquidity constraints certainly exist for some low wealth households, they do not prevent most households from starting a business. Before we discuss alternative explanations for why high-wealth households are more likely to start business, we test the sensitivity of the results.

4. Sensitivity Tests

One potential issue with the results is that the home equity measure could be a proxy for more than just wealth or liquidity. The characteristics that cause households to build up large amounts of home equity could be the characteristics that lead households into entrepreneurship. Basically the home equity measure could be capturing the effects of unobservable variables that are correlated with wealth and the desire to start a business. The use of instrumental variables offers a way of circumventing this problem, and we use the change in the MSA or state level housing price index over the three years prior to the entrepreneurial decision as our instrument.

Any increases in housing prices in the three years prior to the entrepreneurial decision should provide increased wealth to homeowners and may loosen any liquidity constraints. Of course, an increasing housing price index is likely to be correlated with good economic times in an area, which could also influence the entrepreneurial decision. Thus a positive relationship between the change in the housing price index and entrepreneurship may not be due to increased housing wealth. Including controls for Census region and the state level unemployment rate at the time of the entrepreneurial decision should somewhat control for these general economic effects. Note that the variation in the instrument occurs at the MSA or state level only, and not at the individual level as with the home equity measure. Another importance difference between the two proxies for wealth is that unlike the change in housing price index variable, which assumes that all the homeowners with the same house value in the same MSA or state have the same amount of debt, the home equity measure controls for the amount of home-secured debt of each household.

Results from the IV probit regressions show that the change in housing price instrument is significant in the first stage regression, but it is not considered a strong instrument as the F-statistic is only 6.08.[14] The results from the second stage reveal a positive, but insignificant effect of the instrument on entering entrepreneurship. Given the weak instrument problem, this result provides tenuous evidence that while liquidity constraints do exist, they do not seem to be a significant factor for most entrepreneurs.

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[14] Stock and Yogo (2002) provide evidence that a significant coefficient on the instrument in the first stage regression is not a clear indication of a strong instrument. Table 2 in their paper provides critical values for the F-statistic based on the number of instruments and endogenous regressors. For a single instrument with a single endogenous regressor, the critical value is 8.96.

As another check on the sensitivity of the results, we estimated the same probit models using different definitions of entrepreneurship. In the data section of the paper we describe two alternative definitions of entrepreneurship – self-employment and a less restrictive definition of business owning households. The self-employed definition does not condition on business ownership, and is a very broad definition of entrepreneurship. Results from the linear wealth models using the self-employed definition show a positive and significant relationship between the net worth, non-business net worth and home equity wealth measures and starting a business, although the effect is somewhat smaller for this group. When wealth is entered non-linearly in the models, there is a positive and significant effect above the 2nd quartile of net worth, a positive and significant effect for households in the top 5 percent of the non-business net worth and home equity measures, and no significant effects for the liquid asset measure. This weaker relationship between wealth and self-employment may be driven by the self-employed households who do not report owning a business (about 33 percent of self-employed households). The lack of a reported actively managed business may reflect the low capital requirements for certain types of self-employment, such as consultants or contractors.

The second alternative definition of entrepreneurship allows households who started a business in the last three years to have additional older businesses. Thus, this definition includes the households in our preferred definition plus some "experienced" entrepreneurs. About 28 percent of the households considered entrepreneurs under the second definition are experienced entrepreneurs. Results from the linear wealth models for the new and experienced entrepreneurs show a positive and significant relationship between all the wealth measures and starting a business. When wealth is entered non-linearly in the models, the results are analogous to the findings for the new entrepreneur definition. While there are some minor differences in the results across the different definitions of an entrepreneur, the main result holds; the relationship between an exogenous measure of wealth and entrepreneurship is driven by high-wealth households.

As another check on the sensitivity of the results, we experiment with different sample restrictions. First, we change the three-year window for inclusion into the sample to a two-year window. The removal of the businesses with three years of tenure results in a sample of businesses with less survivor bias and households closer to the time of the entrepreneurial decision. Thus, the two-year window may better capture truly new entrepreneurs. Results from the choice model with linear wealth measures for the two-year window sample are analogous to the main results. When wealth is entered in a non-linear form in the models, the results for the net worth, non-business net worth, and liquid asset measures are similar to the main results.

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However, the results for the home equity measure are weaker; the positive and significant effect is only found for the top 5 percent of the distribution, not the top quarter of the distribution. Using the two-year window only slightly alters the main results; the relationship between wealth and entrepreneurship is now driven by very high-wealth households.

Next, we restrict the sample to homeowners. The rational for this restriction is that when using the home equity measure of wealth, renters will implicitly have zero wealth. Of course, this is not true, since they are likely to have other non-housing wealth. However, including renters in the models with the home equity measure of wealth could bias the results, since renters will appear more liquidity constrained. Results for the homeowner sample using the new entrepreneur definition with the home equity wealth measure are similar to the main results. Estimating the models on the homeowner sample using the other wealth measures also yields results similar to the main results. While being a renter does have a negative effect on the propensity to enter self-employment, inclusion of renters in the sample does not seem to alter the relationship between wealth and entrepreneurship.

Another sample restriction involves only using households that live in a MSA. Although we use the MSA level housing price index for most households, we use the state level index for households who are not in an MSA. Use of the state level index for non-MSA households may overstate the change in house prices for these households because the state level index is likely to be dominated by the house price changes that occur in the MSA. Therefore, the state level index may not be a good measure of house price changes for non-MSA households in the sample and could lead to inaccurate values for the home equity measure of wealth for the non-MSA households. In the sample used in the main analysis, about 14 percent of households lived in non-MSA areas. Dropping these households from the sample and re-estimating the models for new entrepreneurs does not change the results.

5. Alternative Explanations for the Wealth and Entrepreneurship Relationship

As shown by the regressions that include a potentially better proxy for wealth or liquidity, the relationship between wealth and entrepreneurship is driven by the households with home equity values above the 75th percentile of that distribution. The minimum home equity value for these households is over $71,000, with mean home equity of about $194,000 and median home equity of over $131,000. In comparison, the mean for homeowner households in the full sample used in the regressions is about $65,000, with a median of just over $34,000.[15]

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[15] The difference is even greater if renters are included in the calculations. Including renters lowers the mean to just over $34,000, while the median drops to zero.

The lack of a significant relationship between wealth and entrepreneurship at low wealth levels signals that liquidity constraints do not bind, at least in a straightforward sense, for most households. As further evidence of this, we examine the distribution of the cost basis of businesses started by new entrepreneurs. Table 2 shows that the mean cost basis of a business is about $60,000, with a median value of $10,000 (not shown in the table). For the 53 percent of the sample that are homeowners, the median home equity value ($34,000) is larger than the median cost basis, and about half the size of the mean cost basis. However, the mean home equity value ($65,000) for homeowner households is larger than the mean cost basis. While the cost basis is not exactly analogous to the amount of initial start-up capital required due to depreciation, it does provide rough evidence that homeowner households have the potential resources to start a business.

The story is quite different for renter households. For the 47 percent of the sample that rents and has no home equity, the next best wealth measure is probably liquid assets. Renter households have mean liquid assets of about $7,000, and median liquid assets of about $1,100. While mean liquid assets are close to the median cost basis value, median liquid assets are far below both median and mean cost basis values. It is likely that renters had more assets available at the time of the entrepreneurial decision, but the endogeneity of the other wealth measures make it difficult to gauge how much they had available. Aside from wealth, one other proxy of liquidity is the amount of credit renters have available on their bank-type credit cards (Visa, Mastercard, etc.). After subtracting out the remaining outstanding balances on their credit cards, the 57 percent of renters with credit cards have a mean of $9,700 in credit available, with a median value of about $4,100. Most renter households would have to seek some sort of outside financing to start a business any larger than one with the median cost basis.

One alternative explanation for the positive and significant relationship between wealth and starting a business is that high-wealth households have different risk preferences. Since businesses are risky ventures, and high-wealth households seem to have lower risk aversion, this could help explain the positive relationship. The proxy for risk in the SCF shows that about 37 percent of households in the top quarter of the home equity distribution are willing to take substantial or above average risks, while only 27 percent of the remaining households fall into this category. Studies such as Carroll (2001) and Charles and Hurst (2003) also report that high-wealth households are more willing to take risks.[16]

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[16] Results from the theoretical model in Cressy (2000) show that allowing household to have decreasing absolute risk aversion can explain the positive relationship between wealth and starting a business.

Results from the regressions also provide evidence on the relationship between risk preferences and starting a business. The dummy variable for households willing to take substantial or above average risks is positive and significant in all the regressions. As an attempt to further understand this relationship, we interact the home equity dummies with the risk dummy and re-estimate the models. The results for the home equity dummies are unchanged; there is a positive and significant effect for households in the top quarter of the home equity distribution. However, all the interaction variables are insignificant. Thus, while risk is an important influence on the entrepreneurial decision, it does not completely explain the relationship between wealth and entrepreneurship.

Another possible explanation is that high-wealth households start different types of businesses than other households. If high-wealth households are more likely to start more capital intense or larger businesses than other households, then the positive relationship between wealth and entrepreneurship could reflect scale effects. Table 5 compares some characteristics of the businesses owned by high-wealth households to businesses owned by other households.[17] Age of the business does not vary much across the two groups, in fact the medians are equal. The median number of employees is the same for both groups, while the mean number of employees for the high-wealth households is twice the number of the other households; this reflects the presence of a few very large businesses owned by high-wealth households. The vast majority of entrepreneurs in both groups own only one business, which is not too surprising given the three-year window we examine. Most of the entrepreneurs in both groups own 100 percent of their venture, and the most popular organizational form is the sole proprietorship. However, high-wealth households are much more likely to choose a corporate organizational form.

Sizeable differences are evident in the mean and median business equity values. The mean for high-wealth households is twice as large as the mean for other households, while the median is about 50 percent larger for high-wealth households. This trend continues through to the mean and median cost basis and net income values and indicates that even though the age of the business is similar for both groups, the scale of operations is quite different. This result may reflect entrepreneurs choosing a scale that is feasible with their available resources and could imply that some sort of liquidity constraints do exist. It is impossible to determine if entrepreneurs are operating with an optimal amount of resources or they are just operating within their perceived budget constraints. The fact that the use of the personal commitments (via collateral or guarantees) is higher for the lower-wealth households indicates that those household are more likely to seek outside financing and could face borrowing restrictions.

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[17] The values in Table 5 should be interpreted with caution, due to the small sample sizes.

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Turning to the industry classifications for the two groups of entrepreneurs, note that high-wealth entrepreneurs have an extremely large presence in personal and professional services.[18] Over one-third of high-wealth entrepreneurs have businesses in this category, compared to only 17 percent of other households. This result mirrors the result found in Hurst and Lusardi (2003) using PSID data from 1989. To further test this relationship, we interact an indicator for being in the personal and professional services industries with the home equity value dummy variables. The results show a positive effect for households in the top 5 percent of the home equity distribution, but the coefficients on the interaction terms are not statistically significant.

That high-wealth households are more likely to start businesses in the professional industry is not too surprising, since this category includes industries where high levels of human capital are necessary (such as medicine and law). These professions usually generate high levels of income, which in turn can generate high levels of wealth. Furthermore, many of the occupations in the professional industry are likely candidates for individuals to strike out on their own or be given an ownership stake in the business. Doctors, lawyers, accounts, and financial brokers are all examples of these types of occupations.[19] Thus, the wealth and entrepreneurship relationship may partially be explained by the types of industries high-wealth households worked in prior to starting a business.

In the employment section of the SCF, respondents are asked about their employment history. While not every job the individual ever had is captured, information on the longest prior job (excluding the individual's current job) is recorded. We choose to focus on the longest prior job held within ten years of the entrepreneurial decision, since we are primarily interested in the industry that an individual recently worked in. Table 6 shows that over 71 percent of the sample used in the analysis has a longest prior job, with employees (72.2%) more likely to have a longest prior job than entrepreneurs (64.1%).[20] Among entrepreneurs, high-wealth entrepreneurs are only slightly more likely to have a longest prior job than other entrepreneurs.[21]

In the bottom three panels of Table 6, the sample is restricted to those individuals with a longest prior job. The first panel shows that almost 44 percent of the sample currently works in

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[18] Although not shown in Table 5, high-wealth and other entrepreneurs have roughly the same representation in six broad occupation categories. The main difference is more high-wealth entrepreneurs classify themselves in the manager / professional occupations than other entrepreneurs. We choose not to focus on the differences in occupation, because reported occupation is likely to be directly affected by the act of starting a business.

[19] Recall that businesses in which the household head become a partner through a promotion are excluded from the sample.

[20] Individuals without a longest prior job are slightly younger and less likely to be homeowners or married than individuals with a longest prior job.

[21] High-wealth entrepreneurs are entrepreneurs from households with home equity values in the top quartile of the home equity distribution.

the same industry as their longest prior job. In general, entrepreneurs are more likely to work in the same industry as their longest prior job than employees, however, over 56 percent of high-wealth entrepreneurs stayed in the same industry. A similar pattern emerges if we focus on occupation. The last panel in Table 6 combines industry and occupation, with similar results; high-wealth entrepreneurs are more likely to start a business in the same industry and occupation as their longest prior job.

Differences in tenure on the longest prior job between employees and entrepreneurs are not behind the differences in the incidence of currently working in the same industry as the longest prior job. The mean and median tenure on the longest prior job is almost equal for the two groups, as are the mean and median number of years since the longest prior job ended. However, differences in earnings on the longest prior job are more pronounced. Employees had mean annual earnings of about $36,000, with a median of just over $30,000. Entrepreneurs had mean annual earnings of about $50,000, with a median of about $39,000. Among entrepreneurs, high-wealth entrepreneurs do have about two years more mean and median tenure on their longest prior job, but the mean and median number of years since the longest prior job ended is very similar. The differences in annual earnings on the longest prior job are quite large between high-wealth and other entrepreneurs. High-wealth entrepreneurs had mean annual earnings of about $78,000, with a median of just over $60,000, while other entrepreneurs had mean and median annual earnings that were about 40 percent less. The results from Table 6 show that high-wealth entrepreneurs are more likely to start businesses in industries in which they have previous work experience. This allows high-wealth entrepreneurs to gain experience and amass wealth via their high level of earnings. Both of these factors help provide resources and reduce the risk of starting a business.

6. Conclusions

The positive relationship between wealth and starting a business is often interpreted as evidence of the existence of liquidity constraints. However, when we use a better proxy for wealth in the entrepreneurial decision model, the results provide little evidence of liquidity constraints. Instead, the results show that the positive relationship between wealth and starting a business is only significant for households in the top quarter of the home equity distribution. While the results should not be taken to imply that no potential entrepreneurs face liquidity constraints, it appears that for the majority of potential entrepreneurs liquidity constraints are not binding. Examination of the distribution of cost basis values, which shows half of all businesses in the sample were started with $10,000 or less, provides further evidence of the low level of initial investment in most businesses.

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If liquidity constraints do not explain the positive relationship between wealth and entrepreneurship, then what does? One possible explanation for this relationship is the lower risk aversion of many high-wealth households; these households are about 40 percent more likely to report being willing to take substantial or above average financial risks. Another explanation is the specific type and size of businesses high-wealth households start. Over one-third of the businesses started by high-wealth households are in the personal and professional services industries, compared to only 18 percent of businesses started by households in the bottom three-quarters of the home equity distribution. High-wealth households also tend to work in industries and occupations where the potential for starting a business is higher. Furthermore, high-wealth households are more likely to have started a business in the same industry they worked in on their longest prior job. In terms of business size, high-wealth households have businesses with more employees, larger equity values, and larger cost basis values even though the mean and median age of the businesses are almost identical. Granted that having more wealth makes it easier to open a larger business, but it does not imply that these households have to operate on a larger scale. These households may just have a preference for a larger scale operation.

While the above reasons help explain some of the relationship between wealth and entrepreneurship, other factors are almost certainly involved. Intergenerational transmission of businesses or business ability is certainly important, as shown in Hout and Rosen (1999), Blanchflower and Oswald (1998), and Dunn and Holtz-Eakin (1996). Entrepreneurial parents may pass along both "business sense" and wealth to their children, and both elements are likely to increase the chances that the child will someday open a business. High-wealth households also may be better suited to absorb the shocks to consumption and income that starting a business is likely to generate. Not only do households have to provide some or all of the initial investment in the business, but the business may not turn a profit immediately and the income flows are more likely to vary over time. This is a different type of liquidity constraint than the one involving the initial investment. Further research on both these issues would provide valuable insights into what factors matter most when households consider starting a business.

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Table 1

Definitions and Rates of Entrepreneurship, 1995, 1998, and 2001 SCF

(male household heads ages 25-64 who are currently working)

Definition	1995	1998	2001	Pooled
Self-reported self-employed with less than three years tenure	10.7	13.0	9.2	11.0
Started a business in the last three years	15.5	18.9	15.5	16.7
Started a busines in the last three years, and no prior businesses	11.8	15.2	10.4	12.5

All estimates weighted

Table 2
Means of Various Characteristics of New Entrepreneurs and Non-entrepreneurs,
Pooled 1995, 1998, and 2001 SCF
(for male household heads, ages 25-64 who are currently working)
(all values in 2001 dollars)

Variable	Non-entrepreneur	New entrepreneur
Labor earnings	37,672	53,212
Income	55,566	82,931
Net worth	115,256	460,876
Non-business net worth	115,242	305,932
Active business	0	154,595
Cost basis active bus*	0	60,404
Liquid assets	10,421	28,416
Home equity*	30,395	60,750
Owns home*	0.51	0.66
Age of HH head*	37	39
Less than high school	0.15	0.06
High school diploma	0.30	0.20
Some college	0.18	0.29
College degree or higher	0.37	0.45
Head is white	0.73	0.84
Head is in poor health	0.02	0.01
Head is married / lwp*	0.77	0.79
# of kids under 18*	0.95	0.97
High risk taker	0.26	0.41
Tenure at current job	0.96	1.15
Experience*	18	18
Past job SE	0.04	0.06
Spouse/partner works*	0.62	0.63
Problems with payments	0.23	0.24
Turned down for credit	0.32	0.27
Expect inheritance	0.17	0.20
Received inheritance*	0.09	0.07
Amount of inheritance*	5,957	3,958
Ag / Mining / Construction	0.15	0.21
Manufacturing	0.20	0.13
Wholesale / Retail	0.19	0.11
FIRE / Bus / Repair	0.19	0.20
Other industries	0.27	0.35
Manager / Professional	0.27	0.48
Technical / Sales	0.19	0.15
Services	0.09	0.04
Prod / Craft / Repair	0.19	0.17
Operators / Laborers	0.24	0.14
Farm / Forest / Fishery	0.03	0.02
State unemployment rate*	5.02	5.16
# of observations	1079	237

All estimates weighted

Table 3
Weighted Probit Regressions for Entry into Entrepreneurship, With Levels of Wealth
Pooled 1995, 1998, and 2001 SCFs
(for male household heads, ages 25-64 who are currently working)

	Business < 3 years, no prior			
Net worth /100,000	0.005			
	(0.001) ***			
Non-business nw / 100,000		0.003		
		(0.000) ***		
Liquid assets / 100,000			0.004	
			(0.003)	
Home equity / 100,000				0.026
				(0.008) ***
Renter	-0.043	-0.047	-0.051	-0.035
	(0.021) **	(0.021) **	(0.020) **	(0.022)
High school grad	0.045	0.046	0.047	0.046
	(0.040)	(0.041)	(0.041)	(0.041)
Some college	0.144	0.150	0.155	0.149
	(0.056) **	(0.057) ***	(0.058) ***	(0.057) ***
College degree	0.089	0.097	0.105	0.094
	(0.043) **	(0.043) **	(0.043) **	(0.043) **
Experience	0.005	0.006	0.006	0.006
	(0.003)	(0.003) *	(0.003) *	(0.003) *
Experience squared	-1.29E-04	-1.27E-04	-1.26E-04	-1.33E-04
	(8.00E-05)	(7.90E-05)	(7.90E-05)	(7.90E-05) *
Ag / Mining / Const	0.030	0.030	0.030	0.031
	(0.029)	(0.029)	(0.029)	(0.029)
Manufacturing	-0.054	-0.053	-0.052	-0.051
	(0.021) **	(0.021) **	(0.021) **	(0.021) **
Wholesale / Retail	-0.055	-0.055	-0.054	-0.055
	(0.020) ***	(0.020) ***	(0.021) **	(0.021) ***
FIRE / Bus / Repair	-0.015	-0.013	-0.012	-0.012
	(0.023)	(0.024)	(0.024)	(0.024)
White non-Hispanic	0.035	0.036	0.036	0.036
	(0.020) *	(0.020) *	(0.020) *	(0.020) *
High risk taker	0.058	0.060	0.061	0.061
	(0.022) ***	(0.022) ***	(0.022) ***	(0.022) ***
State unemployment	0.018	0.018	0.019	0.018
	(0.008) **	(0.008) **	(0.008) **	(0.008) **
Payment problems	0.025	0.024	0.023	0.025
	(0.025)	(0.025)	(0.025)	(0.025)
Turndown for credit	-0.021	-0.024	-0.026	-0.022
	(0.019)	(0.019)	(0.019)	(0.019)
Expect inheritance	0.007	0.009	0.010	0.010
	(0.022)	(0.022)	(0.022)	(0.022)
Received inheritance	-0.048	-0.048	-0.047	-0.048
	(0.021) **	(0.021) **	(0.021) **	(0.021) **
Longest prior job SE	-0.017	-0.006	0.004	-0.006
	(0.043)	(0.045)	(0.048)	(0.046)
# of observations	1316	1316	1316	1316

Coefficients are marginal effects.
All regressions are weighted, adjusted for multiple imputation,
and include controls for survey year, poor health marital status,
 number of children under 18, region, whether the spouse works,
and problems with credit / payments.
* significant at the 10% level,** significant at the 5% level,*** significant at the 1% level

Table 4
Weighted Probit Regressions for Entry into Entrepreneurship, With Quartile of Wealth
Pooled 1995, 1998, and 2001 SCFs
(for male household heads, ages 25-64 who are currently working)

Wealth measure	Business < 3 years, no prior			
	Nw	Nbnw	Liq	Hmeq
2nd Q of measure	0.166	0.072	0.021	0.031
	(0.057) ***	(0.037) *	(0.040)	(0.043)
3rd Q of measure	0.298	0.132	0.094	0.029
	(0.063) ***	(0.046) ***	(0.046) **	(0.042)
75-95 P of measure	0.435	0.114	0.167	0.128
	(0.077) ***	(0.050) **	(0.053) ***	(0.063) **
Top 5 P of measure	0.728	0.298	0.233	0.206
	(0.077) ***	(0.087) ***	(0.084) ***	(0.090) **
Renter	0.033	-0.011	-0.039	-0.010
	(0.020)	(0.023)	(0.020) *	(0.032)
High school grad	0.014	0.031	0.029	0.044
	(0.034)	(0.039)	(0.040)	(0.041)
Some college	0.071	0.122	0.107	0.149
	(0.047)	(0.055) **	(0.056) *	(0.058) **
College degree	0.014	0.065	0.053	0.089
	(0.035)	(0.041)	(0.042)	(0.043) **
Experience	0.002	0.005	0.005	0.006
	(0.003)	(0.003)	(0.003)	(0.003) *
Experience squared	-9.31E-05	-1.17E-04	-1.15E-04	-1.41E-04
	(7.10E-05)	(7.80E-05)	(7.80E-05)	(8.00E-05) *
Ag / Mining / Const	0.034	0.035	0.044	0.029
	(0.027)	(0.029)	(0.030)	(0.029)
Manufacturing	-0.036	-0.046	-0.050	-0.049
	(0.018) *	(0.021) **	(0.020) **	(0.021) **
Wholesale / Retail	-0.044	-0.053	-0.052	-0.056
	(0.018) **	(0.020) ***	(0.020) **	(0.020) ***
FIRE / Bus / Repair	-0.017	-0.011	-0.013	-0.012
	(0.020)	(0.023)	(0.023)	(0.023)
White non-Hispanic	0.022	0.032	0.028	0.038
	(0.018)	(0.020)	(0.020)	(0.020) *
High risk taker	0.039	0.053	0.045	0.059
	(0.020) *	(0.022) **	(0.020) **	(0.022) ***
State unemployment	0.011	0.017	0.014	0.018
	(0.007)	(0.008) **	(0.008) *	(0.008) **
Payment problems	0.033	0.029	0.040	0.030
	(0.023)	(0.024)	(0.026)	(0.025)
Turndown for credit	0.000	-0.013	-0.012	-0.019
	(0.018)	(0.020)	(0.019)	(0.019)
Expect inheritance	-0.006	0.006	-0.002	0.007
	(0.018)	(0.022)	(0.020)	(0.022)
Received inheritance	-0.049	-0.051	-0.054	-0.046
	(0.016) ***	(0.020) **	(0.019) ***	(0.022) **
Longest prior job SE	-0.020	-0.003	-0.002	-0.007
	(0.033)	(0.042)	(0.045)	(0.044)
# of observations	1316	1316	1316	1316

Coefficients are marginal effects.
All regressions are weighted, adjusted for multiple imputation,
and include controls for survey year, poor health marital status,
 number of children under 18, region, whether the spouse works,
and problems with credit / payments.
* significant at the 10% level,** significant at the 5% level,*** significant at the 1% level

Table 5
Characteristics of Businesses Owned by Households, by Home Equity
Pooled 1995, 1998, and 2001 SCF
(for male household heads, ages 25-64 who are currently working)
(all values in 2001 dollars)

	Percentiles of the home equity distribution	
Characteristic	0-74.9	75-100
Business age (years)		
Mean	1.1	1.3
Median	1.0	1.0
Number of employees		
Mean	5.0	10.0
Median	2.0	2.0
Own one business (%)	88.2	93.1
Share of ownership (%)		
Mean	87.3	86.3
Median	100.0	100.0
Legal organization of business (%)		
Sole proprietor	61.3	46.3
Partnership / LLP	19.7	17.2
S-corporation	11.8	19.8
Other corporation	7.2	15.2
Other type	0.0	1.5
Business equity		
Mean	107,862	283,188
Median	23,760	36,000
Cost basis of business		
Mean	36,277	126,792
Median	8,152	15,771
Net Income		
Mean	25,040	42,822
Median	1,210	2,860
Use of personal commitments (%)	23.7	14.4
Industry (%)		
Agriculture	0.9	1.3
Mining / Construction	21.4	16.8
Manufacturing	13.4	12.3
Wholesale / Retail	11.6	8.4
FIRE / Bus / Repair	21.1	17.9
Trans / Comm / Pub Util	9.3	3.3
Pers & Pro Services	17.7	36.5
Public Admin / Military	4.6	3.7
Own a non-active bus (%)	1.9	1.7
# of observations	131	106

All estimates weighted

Table 6
Frequency of Longest Prior Job Among Employees and Entrepreneurs,
Pooled 1995, 1998, and 2001 SCFs
(for male household heads, ages 25-64 who are currently working)

	Percent
All households in the sample	
Have a longest prior job (LPJ)	71.2
employees	72.2
entrepreneurs	64.1
other entrepreneurs	63.6
high-wealth entrepreneurs	65.4
For individuals with a LPJ	
CJ industry = LPJ industry	43.8
employees	43.2
entrepreneurs	49.1
other entrepreneurs	46.3
high-wealth entrepreneurs	56.6
CJ occupation = LPJ occupation	50.7
employees	50.0
entrepreneurs	56.9
other entrepreneurs	54.9
high-wealth entrepreneurs	62.2
CJ ind & occ = LPJ ind & occ	30.5
employees	29.5
entrepreneurs	38.4
other entrepreneurs	36.9
high-wealth entrepreneurs	42.3

All estimates weighted