Liquidity Constraints, Household Wealth, and Entrepreneurship

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The propensity to become a business owner is a nonlinear function of wealth. The relationship between wealth and entry into entrepreneurship is essentially flat over the majority of the wealth distribution. It is only at the top of the wealth distribution—after the ninety-fifth percentile—that a positive relationship can be found. Segmenting businesses into industries with high– and low–starting capital requirements, we find no evidence that wealth matters more for businesses requiring higher initial capital. When using inheritances as an instrument for wealth, we find that both past and future inheritances predict current business entry, showing that inheritances capture more than simply liquidity. We further exploit the regional variation in house prices and find that households that lived in regions in which housing prices appreciated strongly were no more likely to start a business than households in other regions.

We would like to thank Mark Aguiar, Bob Barsky, Giuseppe Bertola, Amar Bhidé, Marco Cagetti, Kerwin Charles, Steve Davis, Gary Engelhardt, Jim Hines, Stefan Hochguertel, Toby Moskowitz, Vincenzo Quadrini, Jon Skinner, Mel Stephens, Steve Venti, Luigi Zingales, two anonymous referees, and especially John Cochrane for many suggestions and comments. We also thank participants at the National Bureau of Economic Research 2000 Summer Institute, the European University Institute, the Federal Reserve Bank of Chicago, the Innocenzo Gasparini Institute for Economic Research, Johns Hopkins, the University of Milan, the University of Turin, the macro lunch and macro seminar at the Chicago Business School, and the joint public finance/macro seminar at the University of Michigan. Jennifer Kaufman, Edi Grgeta, and David Farber provided excellent research assistance. Financial support from the William Ladany Faculty Research Fund at the Chicago Business School (Hurst) and Dartmouth College's Senior Faculty Fellowships (Lusardi) is gratefully acknowledged. Any errors are our responsibility.

[*Journal of Political Economy,* 2004, vol. 112, no. 2]

I. Introduction

Debate has been ongoing about how various factors, including lending practices, tax policy, and legal impediments, adversely affect entrepreneurial activity. Perhaps the most frequently cited obstacle to new business formation is the inability of would-be entrepreneurs to acquire the capital necessary to start a business. If credit availability is limited and initial capital requirements are sizable, then low-wealth households will be constrained from starting their own businesses. Indeed, a large literature has documented a positive relationship between initial wealth and subsequent business entry (Evans and Jovanovic 1989; Evans and Leighton 1989; Fairlie 1999; Quadrini 1999; Gentry and Hubbard 2001).

Using data from the Panel Study of Income Dynamics (PSID), we find that the relationship between initial household wealth and the propensity to start a business is highly nonlinear. Throughout most of the wealth distribution, there is no discernible relationship between household wealth and the probability of starting a business. Only for households in the top 5 percent of the wealth distribution can a positive relationship be found. Thus, for most of the population, the positive wealth–business entry relationship that is frequently cited as evidence of the existence of liquidity constraints fails to hold.

Data from the National Survey of Small Business Finances (NSSBF) allow us to segment industries in the PSID by required starting capital. If liquidity constraints are important, low-wealth households should be less likely to start businesses in industries requiring high initial capital investments. In fact, the relationship between initial wealth and the propensity to start a business in a low–starting capital industry is nearly identical to the relationship between initial wealth and the propensity to start a business in a high–starting capital industry. Similarly, if households were limited in their ability to borrow the capital needed to finance a new business, we would expect households to accumulate more wealth in the period prior to starting a business. We show, however, that changes in wealth in the recent past are unrelated to subsequent business entry.

Most important, household wealth proxies for more than household liquidity; the traits that render some households more likely to accumulate wealth in nonbusiness forms may also make these households more likely to start a business. To avoid this potential endogeneity problem, we instrumented household wealth with proxies for changes in liquidity. Several authors have found that the propensity to start a business responds strongly to inheritances received in the recent past (Holtz-Eakin, Joulfaian, and Rosen 1994*a*; Blanchflower and Oswald 1998). Given that the receipt of an inheritance is not a random event, inheritances likely proxy for more than just liquidity. If inheritances proxy solely for liquidity, inheritances received in the past should predict cur-

rent business entry, whereas future inheritances should not. We find that inheritances received in the future predict current business formation equally as well as inheritances received in the recent past. Thus inheritances are a rather poor instrument for changes in household liquidity.

We propose an alternative instrument for changes in liquidity: housing capital gains. During the late 1980s, house prices varied a lot across regions of the United States, delivering capital gains (or losses) to home owners in different regions. Unlike inheritances, which are concentrated among those at the top of the wealth distribution, housing capital gains affect households throughout the entire wealth distribution. Households that lived in regions in which there was strong housing appreciation were no more likely to start a business than households in other regions.

Although we find no relationship between wealth and business entry over most of the wealth distribution, we do find that very wealthy households are much more likely to start a business. Section V of the paper offers explanations for this finding. Given that small business ownership is a risky venture (Moskowitz and Vissing-Jorgensen 2002), households with a higher tolerance for risk should be more likely to become business owners, all else being equal. We present evidence that high-wealth households display a higher propensity to take on risk. Additionally, we find that high-wealth households are much more likely to start professional businesses (i.e., law firms and medical practices). The organizational hierarchies of professional firms can result in a positive correlation between wealth and business ownership. Successful lawyers, for example, are more likely to accumulate large amounts of wealth and are also more likely to assume an ownership position in their law firm. Finally, we discuss how business ownership has a luxury good component. As households become wealthier, they are more likely to purchase the benefits associated with owning a business (power over decision making, a flexible time schedule, etc.).

Our results do not imply that any given household wanting to start a small business has unlimited access to credit at reasonable borrowing rates. Given optimal lender behavior and common sense, such results would be implausible. We do conclude, however, that even if some households that want to start small businesses are currently constrained in their borrowing, such constraints are not empirically important in deterring the majority of small business formation in the United States. This may simply reflect the fact that the starting capital required for most businesses is sufficiently small. We provide evidence to this effect throughout the paper. Alternatively, even if the required starting capital for some small businesses is high, existing institutions and lending mar-

kets in the United States appear to work sufficiently well at funneling funds to households with worthy entrepreneurial projects.

II. Household Wealth and the Transition into Entrepreneurship

We begin by examining the relationship between household wealth and the transition into business ownership using data from the PSID, a large-scale panel survey that has followed families since 1968. The distribution of household wealth in the PSID closely matches the wealth data from other household surveys, such as the Survey of Consumer Finances (SCF) (Hurst, Luoh, and Stafford 1998; Juster, Smith, and Stafford 1999). In 1984, the PSID began asking detailed questions about household wealth at five-year intervals. Additionally, in every survey year, respondents are asked whether or not they own a business. Given that the PSID did not start asking information on wealth prior to 1984 and that PSID data are not yet available beyond 1999, our analysis is focused on the time period spanning from 1984 to 1994.

Empirically testing the effects of liquidity constraints on entrepreneurship requires us to define both of these terms. We view liquidity constraints as the inability of households to borrow to finance their entrepreneurial projects. If starting capital is nontrivial, this inability to borrow constrains low-wealth households from starting a business, implying that the likelihood of small business formation should increase with household wealth. Furthermore, if liquidity constraints are driving the positive correlation between household wealth and starting a business, then this relationship should vanish at high levels of wealth as the constraint ceases to bind. While many empirical papers have found a positive relationship between wealth and starting a business (Evans and Jovanovic 1989; Evans and Leighton 1989; Fairlie 1999; Quadrini 1999; Gentry and Hubbard 2001), we are aware of no papers that test the latter prediction.

Theory provides little guidance on how to classify "entrepreneurs." Given our focus on wealth, we concentrate on households that report owning at least one business and define entrepreneurs essentially as business owners, similar to what has been done in several other studies.[1] Specifically, we utilize responses from PSID questions, including "Did you (or anyone else in the family) own a business at any time (in year

[1] Cagetti and De Nardi (2001) and Gentry and Hubbard (2001) use business ownership to define entrepreneurs. Evans and Leighton (1989), Evans and Jovanovic (1989), Blanchflower and Oswald (1998), and Fairlie (1999) use self-employment. Meyer (1990) and Quadrini (1999) use both business ownership and self-employment status, whereas Holtz-Eakin et al. (1994*a*, 1994*b*) use Schedule C in federal income tax returns to define entrepreneurs. Some authors restrict entrepreneurs to having at least $5,000 of equity in their business. Given the results of the NSSBF data discussed below, we made no such restriction.

X) or have a financial interest in any business enterprise?" After that, respondents are asked the type of business, who in the family owned it, whether the owner worked in the business, and whether the business was incorporated. As part of the PSID wealth supplement, households were asked to report the value of the business if all assets were sold and debts were paid off. As a robustness check, we also defined entrepreneurs as being "self-employed," which is distinct from owning a business. The main results of this paper are unaffected by whether we classify entrepreneurs as business owners or as self-employed. Below, we report only the results for the first definition of entrepreneurship.

To examine the role of initial wealth in the business formation decision, we create a pooled sample of non–business owners from the 1989 and 1994 waves of the PSID. A household is defined to enter entrepreneurship if either the household head or the spouse became a business owner in the subsequent one-year period (either 1990 for the 1989 non–business owners or 1995 for the 1994 non–business owners). To eliminate households in which the head is still in school or is close to retirement, we restrict our sample to nonretired household heads between the ages of 22 and 60. Our total sample has 7,645 observations.

In table 1, we report descriptive statistics about the subsample of households that transitioned into entrepreneurship during the following year and compare those statistics to the subsample of households that remained non–business owners. On average, those transitioning into entrepreneurship were more likely to be white, male, and married and to have high education and high income. New business owners also held substantially higher amounts of wealth.

A. Household Wealth and the Transition into Entrepreneurship: Base Results

In this subsection, we explore the relationship between household wealth and the probability of starting a business. We begin by estimating a probit model of the transition into business ownership in the subsequent year as a function of household wealth and several other controls. These controls include a quadratic in age; a series of education, race, and family structure dummies; a quadratic in household labor income; dummies for whether the household head is currently unemployed or had been unemployed anytime in the prior five years; and a dummy for whether the household had been a business owner anytime in the prior five years.[2] Household wealth is defined as the sum of savings and

[2] These controls are similar to those included by others in the literature (see, e.g., Evans and Jovanovic 1989; Evans and Leighton 1989; Meyer 1990; Fairlie 1999; Quadrini 1999; Gentry and Hubbard 2001). We experimented with other controls, including changes in

TABLE 1
DESCRIPTIVE STATISTICS OF NEW BUSINESS OWNERS AND NON–BUSINESS OWNERS: POOLED 1989/94 SAMPLE

Variable	Subsequent Non–Business Owners (N=7,341)	Subsequent Business Owners (N=304)	p-Value of Difference
Age of head	38.2	38.6	.36
Education dummy (head):			
Less than high school	.17	.08	<.01
High school	.34	.25	<.01
Some college	.23	.25	.40
College or more	.26	.42	<.01
Dummy: African American head	.18	.07	<.01
Dummy: female head	.28	.07	<.01
Dummy: household head is married	.50	.66	<.01
Average family labor income, previous 5 years	$38,927	$51,700	<.01
Dummy: household experiences unemployment, previous 5 years	.22	.19	.15
Dummy: household owns a business, previous 5 years	.16	.51	<.01
Household net worth:			
Mean	$72,700	$144,800	<.01
Median	$26,900	$53,500	<.01

NOTE.—The sample includes all households in the PSID between the ages of 22 and 60 that did not own a business in either 1989 or 1994 and subsequently remained in the PSID for one additional year. Dollar values are expressed in 1996 dollars. All statistics presented in the table are means, unless otherwise indicated. The weighted percentage of households that become business owners in the subsequent year is 0.045.

checking accounts, bonds, stocks, individual retirement accounts, housing equity, other real estate, and vehicles, minus all debt.[3] All values in the text and tables are expressed in 1996 dollars unless otherwise indicated.

In table 2, we report probit estimates of the effect of household wealth on the transition into entrepreneurship using two specifications for wealth. In column 1, we consider the current level of household wealth, similar to what previous studies have done. We refer to this specification as the "linear" wealth model. In column 2, we use a fifth-order polynomial in wealth, referring to this specification as the "nonlinear" wealth model. The coefficient on wealth in the linear model is positive and statistically significant, indicating that wealthier households are more likely to become entrepreneurs. The marginal effect of an incremental change in wealth, however, is small. Increasing household wealth by

marital status and family size, a vector of region dummies, and state economic controls. None of the additional controls we tried affected our main results.

[3] See Hurst et al. (1998) for a full description of the PSID wealth data and each wealth component.

TABLE 2
PROBIT ESTIMATES OF HOUSEHOLD BUSINESS ENTRY DECISION: POOLED 1989/94 SAMPLE (N=7,645)

	Model 1: Probit Coefficients (Linear in Wealth) (1)	Model 2: Probit Coefficients (Fifth-Order Polynomial in Wealth) (2)
Income/demographic controls included?	yes	yes
Wealth levels:		
Wealth/100,000	.056	.018
	(.027)	(.014)
(Wealth/100,000)^2		−.028
		(.106)
(Wealth/100,000)^3		.019
		(.033)
(Wealth/100,000)^4		−.003
		(.004)
(Wealth/100,000)^5		1.11 E−4
		(1.83 E−4)
Marginal effect of increasing wealth/$100,000	.0048	.0029
p-value of joint significance of all wealth variables	.037	.092
Pseudo R^2	.118	.125

NOTE.—This table reports probit estimates of the transition into business ownership in the subsequent year. The sample is composed of non–business owners in either the 1989 or 1994 PSID. Regressions include controls for demographics (age, education, and family composition), current and past income and employment status, and past business ownership. In model 1, wealth is entered linearly. In model 2, a fifth-order polynomial in wealth is used. Huber-White standard errors are reported in parentheses. Marginal effects for the sample are computed for each household and averaged over households. The weighted percentage of households in the sample becoming business owners in the subsequent year is 0.045.

$100,000 increases the probability of starting a business by less than one-half of one percentage point.[4] Given that the base probability of becoming an entrepreneur in the subsequent year is 4.5 percent, an increase in wealth of $100,000 would increase the probability of business ownership by only 10 percent, from roughly 4.5 percent to 5 percent. Relative to both the mean and the median values of wealth for this sample (table 1), a $100,000 increase in wealth represents a very large change in wealth. However, the sign, significance, and magnitude are all similar to the results reported by other authors who have used different data sets, different sample periods, or different definitions of entrepreneurship.

Column 2 of table 2 reports the coefficients of a fifth-order polynomial in wealth. Including a fifth-order polynomial fits the data better than including either a quadratic or a cubic in wealth because the data include a handful of households with very large wealth values (in excess

[4] All reported marginal effects in this paper were computed for each individual and averaged across individuals.

of $1 million) or very low wealth values (below −$100,000). Relative to the fifth-order polynomial specification, a likelihood ratio test rejects the specification in which wealth is included linearly (p-value .05).[5] Column 2 of table 2 shows that all the wealth terms in the nonlinear specification are jointly significant (p-value .09). The average marginal effect estimated from the nonlinear model is much smaller than the average marginal effect estimated from the linear wealth model (0.0029 vs. 0.0048 per $100,000 change in wealth).[6]

To better interpret these marginal effects, we graph the relationship between wealth and the predicted probability of becoming an entrepreneur using the coefficient estimates in table 2. In computing the predicted probabilities, we evaluated all other controls, except household wealth, at their sample means. The solid line in figure 1 represents the predicted probabilities of starting a business estimated from the linear wealth model. The dotted line in figure 1 represents the predicted probabilities estimated from the nonlinear model. The predicted probability of starting a business estimated from the nonlinear model does not vary with wealth over most of the wealth distribution. The estimated probability of starting a business for someone with $20,000 in wealth is nearly identical to the estimated probability of starting a business for someone with $200,000 in wealth (the estimates are 0.029 and 0.031 with standard errors of 0.003 and 0.005, respectively).[7] It is only at the very top of the wealth distribution—above the ninety-fifth percentile (approximately $300,000 of wealth)—that the probability of starting a business becomes large. The positive association between wealth and business entry found in the linear model is thus driven solely by households at the top of the wealth distribution.

To more precisely document the nonlinear relationship between wealth and starting a business, we reestimate the probit model displayed in table 2 by including wealth dummies instead of including wealth levels directly. We group households into three groups: those residing below the eightieth percentile of the wealth distribution, those between the eightieth and the ninety-fifth percentiles, and those above the ninety-

[5] We also experimented with wealth specifications that included higher-order polynomials in wealth, but results were similar.

[6] This decline in the marginal effect is not surprising given that, as we show below, there is no relationship between wealth and starting a business for households with wealth levels lower than $200,000.

[7] Bootstrapped estimates of the probabilities were computed by reestimating the model in table 2 500 times, computing the predicted probability at each percentile point after each iteration, and taking the means of estimated probabilities.

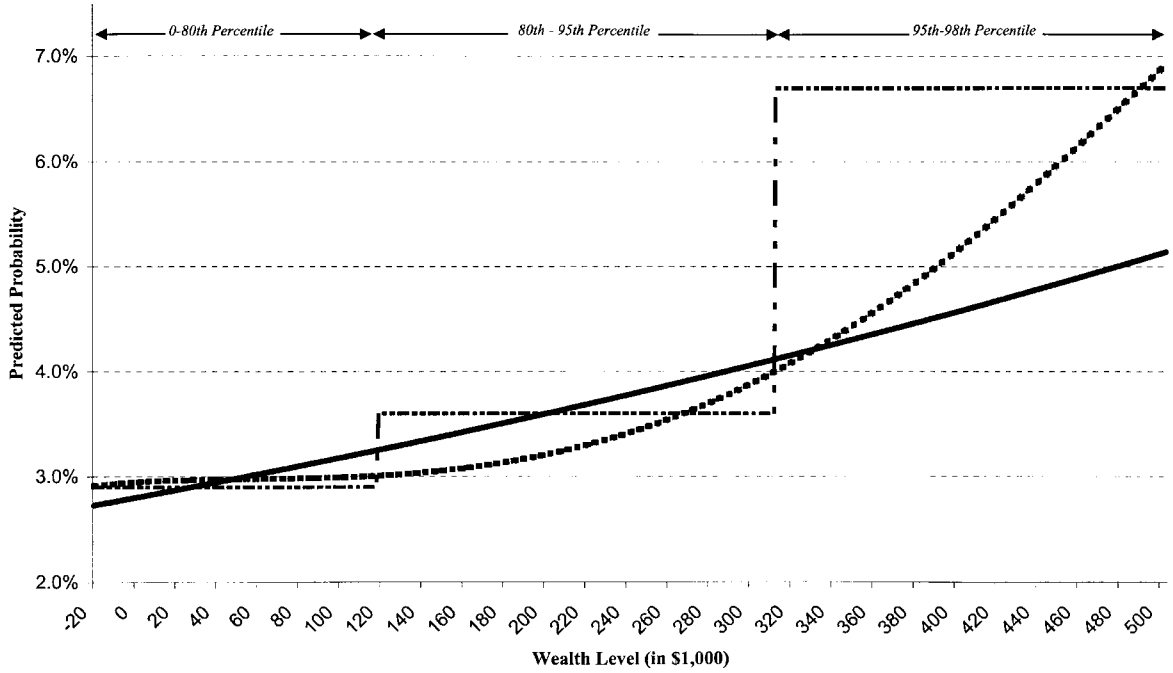

FIG. 1.—Predicted probability of entrepreneurship as a function of wealth, linear wealth model (solid line), nonlinear wealth model (dotted line), and wealth dummy model (dashed line).

fifth percentile.[8] Estimates from this specification are also plotted in figure 1 (dashed line). The estimated probability of starting a business for households in the bottom 80 percent of the wealth distribution is 2.9 percent. Residing in a higher wealth percentile—from the eightieth to the ninety-fifth percentile—increases the probability only by 0.7 percentage point, and the difference was not statistically different from those in the bottom 80 percent. However, the probability increases sharply for those in the top 5 percent of the wealth distribution; these households are 3.8 percentage points *more* likely to start a business, and differences between those at the top of the wealth distribution and the rest of the population are statistically significant at standard levels.

Taken together, the evidence thus far shows that (1) over most of the wealth distribution, there exists no empirical relationship between wealth and entry into entrepreneurship, and (2) the positive relationship between wealth and entry into entrepreneurship in the linear specification is driven by households at the top of the wealth distribution.

B. Household Wealth and the Transition into Entrepreneurship, by Industry Type

Our findings thus far reflect that over most of the wealth distribution the probability of starting a business is about 3 percent, and wealth appears to matter only for those households at the top of the wealth distribution. One possible explanation for this pattern is that little wealth is required to enter most entrepreneurial activities, but high capital requirements may render other activities accessible only to the very wealthy. In the presence of liquidity constraints, wealth should matter more for starting a business that requires a large initial capital investment than for a business that requires a small amount of starting capital. Using data from the NSSBF, we segment industries in the PSID by the amount of capital needed to start a business.

The 1987 NSSBF, a survey of small business firms conducted by the Board of Governors of the Federal Reserve System and the Small Business Administration (SBA), provides information on the use of financial services and institutions for a nationally representative sample of small firms. The target population for the sample is nonfinancial, nonprofessional, nonfarm businesses in operation as of December 1987 with fewer than 500 employees. The sample was selected from the Dun's

[8] We also estimated a specification with dummies for each following wealth quintile: fortieth to sixtieth, sixtieth to eightieth, eightieth to ninety-fifth, and the top 5 percent. Estimates using this specification were similar to a specification using only the three wealth categories described above. Relative to being in the first wealth quintile, the probability of starting a business in the subsequent year was no different if the household resided in the second, third, or fourth wealth quintile.

Market Identifiers file. To compute the amount of capital needed to start a business in different industries, we restrict the sample to include all firms in the survey that were established, inherited, or acquired since 1980. This restriction leaves 1,099 firms in the NSSBF sample.

Respondents in the 1987 NSSBF were asked to report the amount of capital that was used to start or purchase their business.[9] According to NSSBF data, between 1980 and 1988, the median amount of capital used by those starting or acquiring a business was $34,600 (in 1996 dollars). Close to 25 percent of small businesses were started with less than $8,000, and 75 percent of them were started with less than $95,000. Figures are smaller if we focus on newly created businesses only (i.e., excluding those firms that were inherited or purchased): 25 percent started with less than $5,000, and the median starting capital provided by the founder(s) was $22,700.

Table A1 in the Appendix summarizes the twenty-fifth percentile, the median, and the seventieth percentile of the distribution of starting capital across industries in the 1987 NSSBF. We use these figures to designate industries in the PSID as either low–starting capital industries (construction and services) or high–starting capital industries (mining; manufacturing; transportation, communication, and public utilities; wholesale and retail trade; and finance, insurance, and real estate). For businesses in the former, the median starting capital is under $20,000, and the seventy-fifth percentile is under $63,000; businesses in the latter have median starting capital requirements that exceed $45,000, and the seventy-fifth percentile is over $120,000.

The PSID has two additional small business industry categories not covered by NSSBF data: agriculture (farms) and professionals (law practices, medical practices, consulting firms, etc.). Because we have no information to guide us on the starting capital requirements for these types of firms, we experimented with the inclusion of these two industries in each of the two starting capital categories. Our results are not sensitive to the inclusion of agriculture in either the low– or the high–starting capital industries. However, as we show in Section V, high-wealth individuals are much more likely to start a business in the professional industry. As a result, we study the transition into professional industries separately.

To examine whether wealth is more important for entry into a high–starting capital business than into a low–starting capital business, we restrict our sample to those not owning a business in 1989. Since the PSID has not yet made available the industry of the household's business

[9] The NSSBF question is "How much owner's capital was used to start/purchase the business? Owner's capital is the amount of personal capital the owner used to start/purchase the business, including savings and money borrowed against personal assets."

beyond 1993, this sample restriction is necessary. Our sample now includes 3,467 distinct households. The relationship between wealth and starting a business in any industry in the 1989 sample is very similar to the relationship found in the pooled 1989/94 sample described in figure 1.

Figure 2 presents the relationship between wealth and starting a business in three different types of industries: high–starting capital industries, low–starting capital industries, and professional industries. Approximately 35 percent of new business owners between 1989 and 1990 started a business in a low–starting capital industry, 32 percent in a high–starting capital industry, and 19 percent in professional industries; the remainder started a business in the agriculture industry. While we present the results excluding firms in the agriculture industry from any of the three industry classifications defined above, our results are not affected by this exclusion. To compute the estimated probabilities reported in figure 2, we regressed starting a business in a given industry classification on a fifth-order polynomial in wealth and a series of income and demographic controls using a probit model. The income and demographic controls were identical to those used in the regressions reported in table 2.

If liquidity constraints are a deterrent to small business formation, we would expect a positive and stronger relationship between wealth and business entry for those in a high–starting capital industry than for those in a low–starting capital industry. Figure 2 shows this not to be the case. The probability of starting a business in a high–starting capital industry, as a function of wealth, is strikingly similar to the probability of starting a business in a low–starting capital industry. In the 1989 data, the probability of starting a business in either of the two industries actually declines slightly through the ninetieth percentile of the wealth distribution. This decline, however, is not statistically significant for either group. The probability of starting a business in either high–capital requirement industries or low–capital requirement industries does not increase until wealth reaches the top 5 percent of the distribution (above $280,000 in household wealth). Additionally, the marginal effect of wealth on the probability of starting a business in either the high–starting capital industry or the low–starting capital industry, estimated from the nonlinear model, is nearly identical. A $10,000 increase in wealth decreases the probability of starting a business in a high–starting capital industry, on average, by 0.04 percentage point (with a bootstrapped standard error of 0.08), whereas the comparable marginal effect for starting a business in the low–starting capital industry is −0.06 percentage point (with a bootstrapped standard error of 0.10).

The pattern of business entry displayed in figure 2 is consistent with the results of Evans and Leighton (1989). They find that individuals

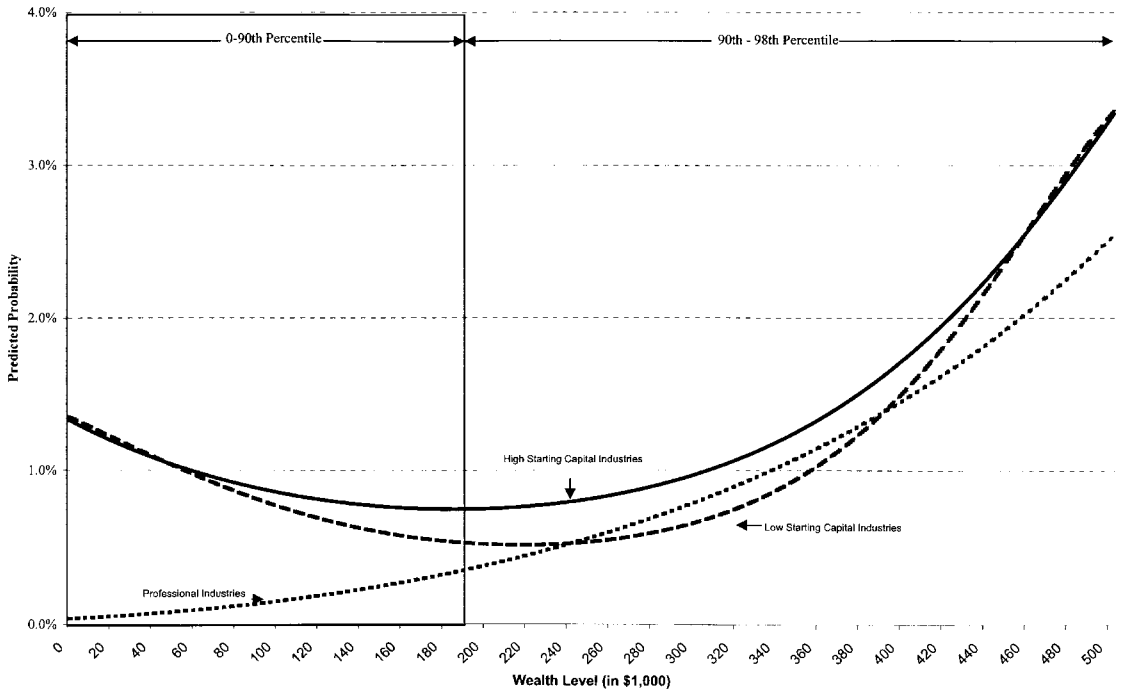

FIG. 2.—Predicted probability of entrepreneurship as a function of wealth, by industry (1989 PSID sample)

with low wages, short job tenures, or frequent or long unemployment spells are more likely to switch into self-employment, even after they control for wealth and education. In other words, households that do not face good opportunities in the labor market are more likely to start a business. We control for income (and income squared) and unemployment status in our regressions. As for wealth, we find some evidence of a U-shaped relationship between income and business entry. Low-income families are more likely to start a business. It should be stressed, however, that the decline in the predicted probability as a function of income is not statistically significant.

Also evident from figure 2 is that the relationship between wealth and starting a business in professional industries is strictly increasing with respect to household wealth. The probability of becoming a partner in a law firm, accounting firm, or medical practice is small if household wealth is low. As wealth increases, the probability increases sharply: for a household with $200,000 of wealth, the probability of starting a business in a professional industry is eight times higher than for a household with $20,000 of wealth (.004 vs. .0005). In Section V, we return to the issue of starting businesses in professional industries.

III. Wealth, Sample Selection, and the Transition into Entrepreneurship

Our analysis above ignores potential issues arising from the self-selection of individuals into entrepreneurship. By construction, high-wealth households in our sample of non–business owners are households that have chosen not to become business owners during earlier periods. As a result, these households may not be representative of high-wealth households in general, perhaps because they have lower entrepreneurial propensities. Such selection could lead us to underestimate the importance of liquidity constraints, even in a world in which liquidity constraints bind. Suppose, for example, that low-wealth households cannot become business owners because of imperfect capital markets, whereas high-wealth households are not business owners because they have less of a preference for owning a business (evidenced by their recurring decision not to become business owners). In such a case, wealth would appear to have little or no effect on entrepreneurial propensities whereas, in fact, liquidity constraints exist and bind. In this section, we discuss how we address potential issues in our analysis arising from the self-selection of individuals into entrepreneurship.

Restricting our pooled 1989/94 sample to include only young households (households in which the head is younger than 35) helps mitigate the self-selection problem. Because young non–business owners have had fewer opportunities to select out and become entrepreneurs, se-

lection issues should be less severe for this sample. Furthermore, in the presence of upward-sloping age-earnings profiles and asymmetric information about individual ability, young households should be more likely to face binding liquidity constraints. To estimate whether liquidity constraints bind in this subsample of young households, we use the same empirical specification as in table 2.

Results for this subsample of the population mirror the results in the total sample, as presented in figure 1.[10] The effect of wealth on the probability of becoming an entrepreneur is approximately flat up until the ninetieth percentile of the young household's wealth distribution (around $100,000). Again, it is only at the very top of the young household's wealth distribution (top 5 percent) that wealth displays a strong, positive relationship with the transition into business ownership. Thus, even for young households, an increase in wealth does not affect the probability of starting a business over the majority of the wealth distribution.

To further address the selection issues associated with using the level of wealth, we consider whether changes in wealth predict entry into entrepreneurship. Buera (2003) develops a dynamic version of the Evans and Jovanovic (1989) entrepreneurial choice model in which would-be entrepreneurs face liquidity constraints. Simply, if liquidity constraints bind, we should observe households accumulating wealth in advance of starting a business.

We rerun the probit model presented in table 2, replacing household wealth levels with household changes in wealth during the previous five years, using our pooled 1989/94 sample. Given the frequency with which the PSID collects wealth data, our analysis is limited to studying five-year changes in wealth. Since the distribution of wealth changes is very wide, we limit the influence of outliers by truncating the top and bottom 1 percent of the change in wealth distribution. Compared with the sample used for the regressions in table 2, these restrictions reduce the sample size to 6,952 observations.

When the change in wealth is entered linearly, the coefficient on the change in wealth is negative, although not statistically different from zero. The corresponding marginal effect of increasing changes in wealth (in $100,000 units) is −0.174 percentage point. In other words, if households accumulated an additional $100,000 in wealth during the prior five years, their probability of becoming an entrepreneur would actually decline by 3.8 percent (−.00174/.045, where .045 is the average probability of becoming an entrepreneur for this sample).

[10] For brevity, the results for the young sample are not presented. Our results are not sensitive to the age cutoff. Restricting our sample to households in which the head is younger than 30 yields the same pattern of results.

As before, we also examine whether there are nonlinearities in the relationship between households' changes in wealth and their subsequent probability of becoming business owners. As in table 2, we include a fifth-order polynomial in changes in wealth. The probability of starting a business is not much different between households that had positive and negative changes in wealth (fig. 3). Essentially, the probability of starting a business is identical between those households that had a $10,000 decline in wealth (thirtieth percentile of the change in wealth distribution) and those households that had an $80,000 increase in wealth (ninetieth percentile of the change in wealth distribution).

One could argue that exploring the relationship between changes in wealth and business entry is troublesome because changes in wealth are dominated by measurement error. Additionally, individual characteristics (such as risk aversion, patience, and financial sophistication) can drive both the propensity to accumulate wealth and the propensity to start a business. Given that we find no effect of wealth changes on business entry over most of the change in wealth distribution, we are less susceptible to the latter criticism. However, in the next section, we explore more exogenous measures of liquidity than simply changes in wealth. Doing so will allow us to address both selection and measurement issues associated with these empirical tests.

IV. Inheritances, Housing Capital Gains, and the Transition into Entrepreneurship

Previous studies have used inheritances to proxy for household liquidity. Blanchflower and Oswald (1998) show that young individuals who received an inheritance are more likely to be self-employed. Holtz-Eakin et al. (1994*a*, 1994*b*) report that those who received an inheritance are more likely to start a business and to succeed in entrepreneurship.

In both the 1989 and 1994 PSID wealth supplements, households were asked to report whether they received inheritances greater than $10,000, the values of these inheritances, and the years in which they were received. In our 1989 PSID sample, almost 5 percent of nonbusiness owners received an inheritance between 1985 and 1988. The average value of inheritances, conditional on receipt, was over $60,000. Regressing the level of household wealth in 1989 on the controls used in the regressions presented in table 2 and the value of inheritances received between 1985 and 1988 yields a coefficient on the value of inheritances of 0.66 (standard error 0.20; *F*-statistic for the inclusion of the inheritance variable, 13.11). In other words, current wealth is higher by $0.66 for each dollar of inheritance received in the previous five years.

Row A of table 3 reports the results of our instrumental variables

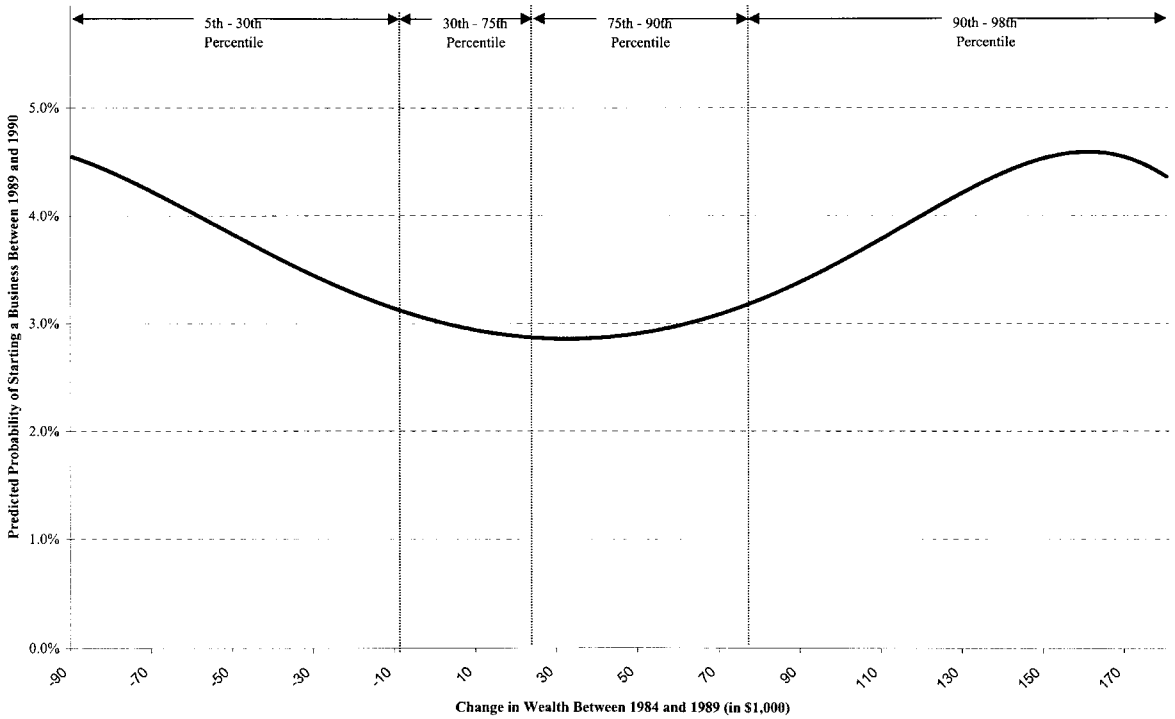

FIG. 3.—Predicted probability of entrepreneurship as a function of a five-year wealth change (1989 PSID sample)

TABLE 3
INSTRUMENTAL VARIABLE ESTIMATES OF EFFECT OF NET WORTH ON BUSINESS ENTRY BETWEEN 1989 AND 1990

Regression Predicting Becoming a New Business Owner between 1989 and 1990	Coefficient on Net Worth/$100,000
A. Instrument: value of inheritances received in 1985–88	.146 (.035)
B. Instrument: value of inheritances received in 1991–94	.168 (.009)
C. Instrument: regional difference in housing appreciation in 1985–88	−.019 (.042)

NOTE.—The sample is restricted to nonretired, non-business-owning households in the 1989 PSID (3,467 households). All three regressions are estimated using a linear probability model. In row A, the value of recently received inheritances is used as an instrument for current net worth. In row B, the value of future inheritances received is used as an instrument for current net worth. In row C, the value of recent housing appreciation in the household's region is used as an instrument for current net worth. All regressions include the same set of controls as in table 2. Huber-White standard errors are reported in parentheses.

regression of starting a business between 1989 and 1990, where inheritances received between 1985 and 1988 were used as an instrument. This regression was estimated on the 1989 sample of PSID non–business owners and included as independent variables all the income and demographic controls discussed in table 2. For this instrumental variables regression, we assume a linear probability model of business entry. Household net worth in 1989, instrumented with past inheritances, is positively and significantly related to business entry in the subsequent year (from 1989 to 1990).

Although using inheritances as an instrument for wealth provides a clever and more convincing way to assess the importance of liquidity constraints, it still suffers from shortcomings. First, many small and mid-size businesses are transferred to heirs upon the death of the owner. Estimates from the 1993 NSSBF indicate that over 6.5 percent of business owners inherited their business. Thus the correlation between the recent receipt of inheritances and entrepreneurship may simply reflect the fact that businesses are being transferred across generations.[11] Second, the inheritance variable may be vulnerable to the same endogeneity concerns as the wealth variable. The receipt of an inheritance is not a random event; households that receive inheritances are much more likely to come from wealthy or otherwise "successful" families. Given the strong intergenerational correlation in occupation, education, wealth, and saving preferences (Altonji and Dunn 2000; Charles and Hurst 2003), households receiving inheritances may have different entrepreneurial propensities—conditional on wealth—than households that do not receive inheritances.

[11] Holtz-Eakin et al. (1994*a*, 1994*b*) attempt to control for whether the business was transferred intergenerationally in their empirical work.

This argument suggests that inheritances are likely to predict entrepreneurship above and beyond simple liquidity effects. By exploiting differences in the timing of inheritances, we can directly test whether the receipt of an inheritance is proxying for liquidity or for other factors such as household human capital, preferences, or "entrepreneurial spirit." If inheritances proxy simply for liquidity constraints, only past inheritances should matter for current business entry decisions. Future inheritances should not be important since liquidity-constrained households are limited in their ability to borrow against future resources. Conversely, if inheritances proxy for other factors that determine the probability of starting a business, inheritances received in both the recent past and the distant future should predict current business entry. Using the information on inheritances available in the PSID, we examine whether the receipt of inheritances between 1991 and 1994 (i.e., after the household started the business) is related to entry into entrepreneurship between 1989 and 1990 and compare it with the results using past inheritances.

The effect of net worth—instrumented with inheritances—on the probability of starting a business is almost identical regardless of whether past inheritances (row A of table 3) or future inheritances (row B of table 3) are used. These results cast severe doubt on the claim that the positive relationship between inheritances and business entry serves as evidence that liquidity constraints are an important deterrent to new business creation.[12]

It is also possible that inheritances are simply proxying for the recipient household already being wealthy. As illustrated in figure 2, very wealthy households are much more likely to start a business. Likewise, very wealthy households are much more likely to receive inheritances. That is, inheritances are extremely concentrated among households in the top of the wealth distribution. Using our PSID pooled sample, we find that households in the top 10 percent of the wealth distribution are over four times more likely to receive an inheritance than households in the bottom 90 percent of the wealth distribution. Furthermore, the value of inheritances, conditional on receipt, is twice as large for households in the top 10 percent of the wealth distribution as for other households.

[12] Given the findings on the timing of inheritances discussed above, wealthy families do not appear to provide children with otherwise unattainable liquidity. However, these families may minimize the downside risk of starting a business in that wealthy parents may be more likely to support children who started a business and failed.

A. *A Different Instrument for Liquidity: Capital Gains on Housing*

Instead of relying on inheritances, we propose an alternate instrument for liquidity that is less likely to display an underlying correlation with other factors that determine entrepreneurial propensities: capital gains on housing. During the mid-1980s, U.S. house prices increased considerably and delivered capital gains to many households. In Appendix table A2, we report the variation in house price appreciation across U.S. census regions between 1985 and 1988, as measured by the Office of Federal Housing Enterprise Oversight. House prices in New England appreciated by over 68 percent between 1985 and 1988, whereas house prices in the West South Central region fell by over 10 percent. To capture changes in wealth experienced by most households, not simply those at the top of the wealth distribution, we exploit regional changes in house prices as an instrument for household wealth.

Changes in house prices are not purely exogenous. For example, economic conditions could be more favorable in one region than in another. If this were the case, we would expect both house prices in that region to increase (as households migrate into that region) and households to be more likely to start a business (as economic conditions are more favorable). To account for the endogeneity of house prices, we create a measure of house price changes after controlling for both state and regional economic conditions. The use of micro data (as opposed to regional data) allows us to control for household demographics and initial house size, which may be correlated with house price appreciation.

In each wave of the PSID, households self-report the value of their home. To calculate the regional appreciation in house prices net of household demographics and regional economic activity, we regress changes in the self-reported value of homes for nonmoving PSID home owners during 1985–88 on household demographic variables (household age, education, race, gender, marital status, family size, income, employment status, and initial house value), region dummies, and state economic controls. The state economic controls included the level of state gross domestic product per capita in 1985, the growth rate of state GDP per capita between 1985 and 1988, and the state unemployment rate from 1985 to 1988.[13] The variation captured by the region dummies is thus the regional variation in house prices net of changes in economic conditions in the states constituting the region. The coefficients on the region dummies from this regression are then assigned to each household in our 1989 sample of non–business owners. We use the variation in house price appreciation across regions as an instrument for house-

[13] We use nine region dummies defined as U.S. census regions. See App. table A2 for the U.S. states included in each census region.

hold wealth. If liquidity is important, we predict that households that lived in areas in which housing capital gains were larger should be more likely to start a business, with everything else held equal.

Two considerations with respect to this instrument are particularly noteworthy. First, if potential entrepreneurs intend to use home equity to surmount liquidity constraints, it is not important whether households perceive these changes in house prices to be transitory or permanent. As long as lenders are willing to lend to households on the basis of their housing equity, households can borrow against their increased housing equity to relax any liquidity constraints they face. This notion is supported by empirical evidence that lenders are willing to lend (and households are willing to borrow) when households receive large capital gains on housing (Hurst and Stafford 2004). Second, regional movements in business conditions, not proxied by our economic controls, could cause both changes in house prices and changes in the desire of households in a given region to become business owners. If this latent unobserved variable results in a positive correlation between house prices and the propensity to start a business, our instrumental variable procedure will be biased toward finding an effect of wealth on business creation.

The first-stage regression for our sample indicates that our instruments have predictive power for household net wealth. Regressing the level of household wealth in 1989 on the controls used in the regressions presented in table 2 and our predicted regional house price appreciation controls leads to a coefficient on the regional variation in house prices of 0.94 (standard error 0.27; *F*-statistic on the inclusion of the inheritance variable, 12.6). Thus households save approximately 94 percent of their housing capital gains (and we cannot reject the hypothesis that households save 100 percent of the gain). Results for this first-stage regression are consistent with other work (Engelhardt 1996; Skinner 1996; Hurst and Stafford 2004).

The instrumental variable estimates in row C of table 3 show that the coefficient on wealth—instrumented with regional house price appreciations—is negative but not statistically different from zero. Thus, when we consider a more exogenous measure of liquidity than simply net wealth, our estimates again offer little support in favor of liquidity constraints.

V. Interpreting the Nonlinear Relationship between Wealth and Entrepreneurship

The results above show that wealth is not an important predictor of entry into entrepreneurship for the majority of households. In this section, we provide explanations for this finding. Additionally, we discuss

why there exists a strong correlation between wealth and business entry for households with very high wealth.

One reason why wealth is not important for starting a business in the United States is that the capital required to start most businesses is relatively low. As summarized above, the 1987 NSSBF data show that the median amount of capital used by households founding their own business was $22,700. Close to 25 percent of small businesses were started with less than $5,000. Meyer (1990) examines the amount of starting capital using the 1982 Characteristics of Business Owners data and reports even smaller figures. In that data set, 63 percent of nonminority males and 78 percent of black business owners indicated that they required less than $5,000 to start their businesses (approximately $8,700 in 1996 dollars). Similar results are reported by Bhidé (2000), who analyzed a sample of firms tracked by *Inc. Magazine* as the 500 fastest-growing companies in the United States. Most of the firms in his sample started with little capital, and 26 percent of them started with less than $5,000 in up-front capital.

Close to 38 percent of business owners in the 1989 PSID sample report business equity below $5,000, and approximately 30 percent report zero business equity.[14] When we restrict our attention to new business owners, the findings are similar. Of those households not owning a business in 1989 but owning one in 1994, 61 percent had less than $5,000 in business equity in 1994 and over 75 percent had less than $25,000 in business equity. Only 8 percent of new business owners had business equity greater than $100,000. Not only are the numbers very similar when one considers earlier periods in the PSID, but they also are similar to numbers computed using different data sets, such as the 1995 SCF, the 1992 Health and Retirement Study, and the 1997 National Longitudinal Survey of Youth (authors' calculations). Even though the data sets mentioned above report data on business equity, it would be more informative to have data on business assets. As long as business owners can borrow, they do not have to hold large amounts of equity. To address this issue, we look at the borrowing opportunities of entrepreneurs in the United States.

The balance sheets of firms surveyed by the NSSBF in 1987 and 1993 show that the large majority of firms report borrowing from several different sources and in several different forms (line of credits, mortgages on businesses, equipment loans, motor vehicle loans, loans from partners, credit card loans, and other types of loans). For example, 72 percent and 79 percent of firms report some form of borrowing in the

[14] The PSID data do not separately record the assets and liabilities of the households' businesses. The PSID asks its respondents to report only their net position in their businesses.

1987 and 1993 NSBBF, respectively. Another reason why wealth is not important for starting a business is that, in the United States, institutions are available to provide funds to entrepreneurs. In 1953, the SBA was established to monitor and promote business ownership. With a primary focus on channeling funds to entrepreneurs with worthy projects, the SBA has made over 20 million loans and loan guarantees to entrepreneurs since 1953 (see Small Business Administration 1997). In 1997 alone, the SBA issued over $9.5 billion in loans to small businesses through its loan guarantee program.

Given the evidence that initial capital investments are small and that many small businesses are loan recipients, it is perhaps not surprising to find little or no relationship between wealth and the probability of starting a business over most of the wealth distribution. We want to stress, however, that our results do not suggest that any household that wants to start a small business has unlimited access to credit at the risk-free rate. Rather, the results indicate that even if some households are constrained from borrowing, such constraints are not empirically important in deterring the majority of small business formation in the United States.

Although wealth has little effect on business start-up throughout most of the wealth distribution, there does exist a strong relationship between wealth and entrepreneurship for high-wealth households. Because this relationship occurs at very high levels of wealth, in excess of $200,000–$300,000, it is unlikely to be the result of binding liquidity constraints. Several pieces of evidence confirm that the behavior of wealthy households that start businesses, along with the types of businesses started, is very different from the behavior of households that start businesses in the rest of the wealth distribution.

First, evidence that wealthy households have different preferences for risk than less wealthy households, coupled with the inherently high risk of new business ventures, suggests that households with higher tolerances for risk should be more likely to own a business, all else equal. Examining household portfolios in the SCF, Carroll (2002) finds that those at the very top of the wealth distribution are substantially more willing to take risks. Charles and Hurst (2003) draw similar conclusions after analyzing survey measures of risk aversion in the PSID, finding that only households in the top quartile of the wealth distribution are much more likely to report a willingness to take very risky gambles. The fact that very wealthy households are much more likely to take risks may explain why the probability of starting a business increases only for households at the top of the wealth distribution.

Households at the top of the wealth distribution are also much more likely to start businesses in the professional industry. Table 4 shows the distribution of industries for new business owners between 1989 and

TABLE 4
INDUSTRY BREAKDOWN OF NEW ENTREPRENEURS BY INITIAL WEALTH: 1989 SAMPLE

Industry in Which the Entrepreneur Entered	Full 1989 Sample (1)	Top 20% of Wealth Distribution (2)	Bottom 80% of Wealth Distribution (3)	*p*-Value of Difference in Means between Cols. 2 and 3 (4)
Agriculture	.128	.131	.127	.955
Construction	.124	.088	.138	.404
Manufacturing	.034	.048	.028	.549
Transportation	.038	.003	.052	.159
Sales (wholesale or retail)	.148	.050	.188	.034
Finance, insurance, or real estate	.092	.197	.051	.006
Professional (medical, law, or accounting)	.191	.336	.132	.006
Service	.228	.113	.274	.034

NOTE.—The sample includes all non-business-owning households in the PSID in 1989 with heads between the ages of 22 and 60 who remained in the sample through 1990 (3,467 households). New entrepreneurs are defined as not owning a business in 1989 and subsequently owning a business in 1990. Col. 4 provides the *p*-value of a *t*-test of the difference in means between new entrepreneurs in the top 20 percent of the wealth distribution (col. 2) and new entrepreneurs in the bottom 80 percent of the wealth distribution (col. 3).

1990 by wealth category. In that time period, 19 percent of new business owners started a business in the professional industry, the majority of which were firms in the medical, legal, accounting, or management consulting industries. The probability of starting a business in the professional industry differs across wealth holdings. As reflected in column 2 of table 4, of new business owners with initial wealth in the top 20 percent of the wealth distribution, over one-third started their business in a professional industry. For new business owners in the bottom 80 percent of the distribution, on the other hand, the comparable figure was 13 percent. Thus a disproportionately large number of wealthy households start businesses in the professional industry.

How much of the relationship between wealth and business entry found at the upper end of the wealth distribution is the result of wealthy households entering professional industries? Using the nonlinear specification discussed in figure 2, we estimate the probability of starting a "nonprofessional" business. As expected, the effect of wealth on starting a business in a nonprofessional industry is not as strong as when professionals are included. Essentially half of the correlation between wealth and the propensity to start a business found among households in the top 10 percent of the wealth distribution can be attributed to such households starting businesses in the professional industry.

Why is it, then, that high-wealth households are much more likely to start a business in a professional industry? Households working in the professional industry are likely to have accumulated large amounts of human capital, which also fosters wealth accumulation (because of

higher patience [Lawrance 1991] or higher financial sophistication). Moreover, the traditional organizational structure of firms in the professional industry is such that successful employees assume ownership positions in the firm (i.e., a successful lawyer will eventually be promoted to firm partner). Given that successful professionals likely earn higher incomes and accumulate higher amounts of wealth, it is not unexpected to observe high-wealth households disproportionately becoming business owners in the professional industry.[15]

Another reason why business entry is prominent among the wealthy is that business ownership is a luxury good. Many authors have demonstrated that there exists a large personal consumption component to business ownership. Moskowitz and Vissing-Jorgensen (2002), for example, conclude that the large nonpecuniary benefits from owning a business reconcile the fact that returns to small business ownership (private equity) are no higher than returns to public equity, despite the additional risk associated with small business ownership. Additionally, Hamilton (2000) finds that most entrepreneurs enter and persist in business ownership despite having both lower initial earnings and lower earnings growth than in paid employment. Like Moskowitz and Vissing-Jorgensen, Hamilton asserts that "the empirical results suggest that the nonpecuniary benefits of self-employment are substantial" (p. 604). If these nonpecuniary benefits from business ownership—such as the ability to control one's own schedule, the ability to make all decisions, and the utility derived from being considered an entrepreneur—are large and are luxury goods, we would again expect wealthy individuals to be more willing to start a business than less wealthy individuals, all else equal.

The claim above is difficult to evaluate because most micro panel data sets do not ask households about their consumption of luxury goods. The PSID, however, does ask about additional real estate ownership (aside from the household's primary home), which includes vacation and second homes. While this measure may be imperfect, we expect the ownership of "second homes" to have a large luxury consumption component. In fact, the effect of wealth on the probability of acquiring a second home is very similar to the effect of wealth on the probability of starting a business. The probability is flat up through the eightieth percentile of the wealth distribution. Again, it is only at the top of the wealth distribution that the probability of acquiring a second home starts to increase sharply.

[15] Businesses can also serve as tax shelters. According to the Statistics of Income data on partnerships, a large percentage of partners were "limited partners," i.e., investors who played no role in the daily activity of their enterprises. For a related discussion, see also Holtz-Eakin et al. (1994*b*).

VI. Concluding Remarks

Several studies have documented the positive relationship between wealth and the likelihood of starting a business. This association has been translated into evidence that liquidity constraints are a deterrent to new business formation. This conclusion is premature. Throughout most of the wealth distribution (up through $200,000 in household wealth), there is no discernible relationship between household wealth and the probability of starting a business. Only for households at the very top of the wealth distribution is there a strong and positive relationship between household wealth and business entry. This shows that liquidity constraints, while possibly important for some households, are not a major deterrent to small business formation in the United States.

Data on capital requirements for start-ups in different industries, the timing of inheritances, and the experience of households that enjoyed capital gains on their homes from the mid-1980s through the mid-1990s provide further evidence that high levels of liquidity are not essential for starting a small business. Given that almost all micro data surveys of business ownership show that most business owners start with very little initial capital, it is not surprising that wealth does not matter for starting a business. Additionally, even when the up-front costs of starting businesses are large, existing lending markets appear to work well at funneling resources to would-be entrepreneurs.

While the results in this paper address the decision to start a business, other dimensions of the entrepreneurial process could be affected by liquidity constraints. For example, the inability to borrow may prevent households from starting businesses at their optimal scale. Thus, while liquidity constraints do not prevent entrepreneurs from starting a business, entrepreneurs may have to start smaller than when constraints are not present. Given the limits of the PSID data, testing this claim is difficult; nevertheless, it is a fruitful area for future research.

In future work, the role of family background on the probability of starting a business, along with the survival rate of that business, should be more fully explored. Children who receive inheritances are much more likely to start a business, regardless of when inheritances were received. While children who receive inheritances are likely to come from relatively wealthy families, it in unclear whether wealthy parents teach their children about either investment behavior, in general, or small business investment, in particular. Furthermore, do wealthy parents provide an implicit insurance to their children, thereby limiting their downside risk in case the business fails? Understanding these questions may shed much needed light on the decision of households to start small businesses.

Appendix

TABLE A1
STARTING CAPITAL FOR NEW BUSINESS OWNERS BETWEEN 1980 AND 1987

INDUSTRY	STARTING CAPITAL VALUE			FIRMS IN INDUSTRY CATEGORY (%)
	First Quartile	Median	Third Quartile	
Low–starting capital industries:				
Construction	$2,860	$9,500	$30,100	10.9
Services	$3,450	$19,400	$62,719	30.3
High–starting capital industries:				
Mining	$1,730	$37,800	$394,375	1.2
Transportation, communication, and public utilities	$15,120	$47,300	$143,300	3.0
Finance, insurance, and real estate	$7,900	$36,500	$173,260	4.8
Manufacturing	$16,165	$47,300	$151,200	7.9
Wholesale trade	$11,010	$41,400	$145,860	8.5
Retail trade	$21,880	$55,200	$118,150	33.3

NOTE.—Data are taken from the 1987 National Survey of Small Business Finances. All values are reported in 1996 dollars. The sample includes 1,099 small businesses.

TABLE A2
REGIONAL HOUSE PRICE APPRECIATION BETWEEN 1985 AND 1988

U.S. CENSUS REGION	OFHEO REPEAT HOUSING SALES INDEX		HOUSE APPRECIATION BETWEEN 1985Q1 AND 1988Q4 (%)
	1985Q1	1988Q4	
New England	170.7	287.1	68.2
Mid-Atlantic	142.7	227.8	59.6
Pacific	123.5	169.4	37.2
East North Central	104.4	136.0	30.3
South Atlantic	127.4	155.9	22.4
East South Central	116.7	136.1	16.6
West North Central	113.8	128.3	12.7
Mountain	121.8	124.1	1.8
West South Central	124.3	110.0	−11.5
All regions	124.0	160.8	29.7

NOTE.—Data are taken from the Office of Federal Housing Enterprise Oversight (OFHEO) repeat residential housing price index (base year: 1980Q1 = 100). New England region includes Connecticut, Massachusetts, Maine, New Hampshire, Rhode Island, and Vermont. Mid-Atlantic region includes New Jersey, New York, and Pennsylvania. Pacific region includes Alaska, California, Hawaii, Oregon, and Washington. East North Central includes Illinois, Indiana, Michigan, Ohio, and Wisconsin. South Atlantic region includes District of Columbia, Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, and West Virginia. East South Central region includes Alabama, Kentucky, Mississippi, and Tennessee. West North Central region includes Iowa, Kansas, Minnesota, Missouri, North Dakota, South Dakota, and Nebraska. Mountain region includes Arizona, Colorado, Idaho, Montana, New Mexico, Nevada, Utah, and Wyoming. West South Central includes Arkansas, Louisiana, Oklahoma, and Texas.

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