

NBER WORKING PAPER SERIES

THE CAPITAL STRUCTURE DECISIONS OF NEW FIRMS

Alicia M. Robb
David T. Robinson

Working Paper 16272
<http://www.nber.org/papers/w16272>

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
August 2010

The authors are grateful to the Kauffman Foundation for generous financial support. Malcolm Baker, Thomas Hellmann, Antoinette Schoar, Ivo Welch, and seminar participants at the Kauffman/Cleveland Federal Reserve Bank Entrepreneurial Finance Conference, the University of Michigan, the Stockholm School of Economics, the Atlanta Fed, and the NBER Summer Institute Entrepreneurship Meetings and the Kauffman/RFS conference on entrepreneurial finance provided helpful comments on previous drafts. Juan Carlos Suarez Serrato provided expert research assistance. The usual disclaimer applies. The views expressed herein are those of the authors and do not necessarily reflect the views of the National Bureau of Economic Research.

NBER working papers are circulated for discussion and comment purposes. They have not been peer-reviewed or been subject to the review by the NBER Board of Directors that accompanies official NBER publications.

© 2010 by Alicia M. Robb and David T. Robinson. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

The Capital Structure Decisions of New Firms
Alicia M. Robb and David T. Robinson
NBER Working Paper No. 16272
August 2010
JEL No. G21,G24,L26

ABSTRACT

This paper investigates the capital structure choices that firms make in their initial year of operation, using restricted-access data from the Kauffman Firm Survey. Contrary to many accounts of startup activity, the firms in our data rely heavily on external debt sources such as bank financing, and less extensively on friends and family-based funding sources. This fact is robust to numerous controls for credit quality, industry, and business owner characteristics. The heavy reliance on external debt underscores the importance of well functioning credit markets for the success of nascent business activity.

Alicia M. Robb
UC, Santa Cruz
arobb@ucsc.edu

David T. Robinson
Fuqua School of Business
Duke University
One Towerview Drive
Durham, NC 27708
and NBER
davidr@duke.edu

1 Introduction

Understanding how capital markets affect the growth and survival of newly created firms is perhaps the defining question of entrepreneurial finance. Yet, much of what we know about entrepreneurial finance comes from firms that are already established, have already received venture capital funding, or are on the verge of going public—the dearth of data on very early stage firms makes it difficult for researchers to look further back in firms’ life histories.¹ Even data sets that are oriented towards small businesses do not allow us to measure systematically the decisions that firms make at their founding. This paper uses a novel data set, the Kauffman Firm Survey (KFS), to study the behavior and decision-making of newly founded firms. As such, it provides a first-time glimpse into the capital structure decisions of nascent firms.

In this paper we use the confidential, restricted-access version of the KFS, which tracks nearly 5,000 firms from their birth in 2004 through their early years of operation.² Because the survey identifies firms at their founding and follows the cohort over time, recording growth, death, and any later funding events, it provides a rich picture of firms’ early fundraising decisions.

Rather than attempt to test specific theories of capital structure, our main goal is a more modest, descriptive one: to examine the financing choices that firms make when they launch, and ask whether any patterns emerge from the data. This is motivated in part by the widely held view that frictions in capital markets prevent startups from achieving their optimal size, or indeed, from starting up at all. In the presence of such acute frictions, startups are assumed to pursue financing from informal channels, or

¹Some noteworthy recent exceptions are Kaplan, Sensoy and Strömberg, 2009, which follows a small sample of firms beginning at business plan stage, and Reynolds (2008) which uses data from individuals who are contemplating starting businesses.

²To be eligible for inclusion in the KFS, at least one of the following activities had to have been performed in 2004 and none performed in a prior year: Payment of state unemployment (UI) taxes; Payment of Federal Insurance Contributions Act (FICA) taxes; Presence of a legal status for the business; Use of an Employer Identification Number (EIN); Use of Schedule C to report business income on a personal tax return.

through the heavy reliance on trade credit (see, for example, Peterson and Rajan, 1994, 2000.) The richness of the KFS data allows us to explore the extent to which startups rely on friends and family versus more formal financing arrangements, such as bank loans, credit cards, and venture capital.

A working null hypothesis for this descriptive exercise is that no clear patterns in capital structure are present, because idiosyncracies in firm and owner characteristics, market conditions and access to financial and human capital are associated with a high degree of variability in the capital structure choices that nascent firms make. The alternative offered by conventional wisdom is that informal capital dominates the capital structure.

Our main result is that newly founded firms rely heavily on formal debt financing: owner-backed bank loans, business bank loans and business credit lines. Indeed, funding from formal debt dwarfs funding from friends and family. The average amount of bank financing is seven times greater than the average amount of insider-financed debt; three times as many firms rely on outside debt as do inside debt. Even among firms that rely on inside debt, the average amount of outside debt is nearly twice that of inside debt.

The reliance on formal credit channels over personal credit cards and informal lending holds true even for the smallest firms at the earliest stages of founding. The average pre-revenue firm in our sample has twice as much capital from bank loans than from insider sources. And when we look at only those firms who access outside equity sources, such as venture capital or angel financing, we still see a heavy reliance on debt: the average firm that accesses external private equity markets still has around 25% of its capital structure in the form of outside debt.

We also examine trade credit as a potential source of capital, especially since it may be especially important in scenarios where trade creditors possess information (or stand to forge relationships through supply channels) that banks might not be able to obtain (Peterson and Rajan, 1997). While our data show that trade credit is undoubtedly

important, the average firm uses less than half as much trade credit as it does outside debt, and almost twice as many firms rely on outside debt than do trade credit. Indeed, if trade credit were counted as a source of financial capital (instead of operating capital), it would rank third, behind outside debt and owner equity, but ahead of outside equity and inside debt/equity.

Of course, these statements only speak to the equilibrium amount of borrowing from inside and outside sources; the quantities are determined by both the supply and the demand of different types of capital. Ultimately, it is challenging to separate supply and demand in the absence of some quasi-experiment. We nevertheless take some small steps in this direction.

First, to control for the fact that differences in firm quality or creditworthiness may be driving the patterns we see in the data, we make use of commercial credit scores of the firms. This gives us two avenues to control for demand-side variation. The first is simply to include the credit score directly in our analysis as a proxy for firm quality. (Alternatively, we can partition the data into high credit and low credit samples and compare capital structures in the two sub-samples.) Surprisingly, this partitioning has little effect on the observed capital structure choices firms make. Firms with high credit scores simply have more financial capital. The level of financing of these firms is nearly three times larger on average than low-credit firms. But the relative amount of outside debt to total capital is about the same for both types of firms.

Second, we identify plausibly exogenous variation in access to capital by using housing price elasticity data calculated by Saiz (2010). Using sophisticated GIS techniques to measure geographical constraints on local land supply, as well as factors that account for endogenous restrictions on land use through zoning, he estimates housing supply elasticities at the MSA level which, in turn, allow us to capture the effect of the housing boom on access to capital. Roughly speaking, high elasticity areas saw housing inventories increase as the housing bubble expanded, while low elasticity areas saw home prices spike

instead. In areas with high elasticity of supply, homes provide better loan collateral, because the underlying home equity is less sensitive to local pricing conditions.

This is exactly what we find. Entrepreneurs in areas with high supply elasticity were more reliant on bank loans as a source of capital. Because our data do not map the entrepreneurs' actual home prices onto bank financing choices, we must remain cautious; nevertheless, we find evidence that high price stability acts as a catalyst for bank loans.

This of course raises the concern that credit conditions at the time of our survey were so unique that they do not necessarily reflect broader patterns from other time periods. While ultimately we are limited to the data that are available, we speak to this possibility by considering the impact of capital structure decisions on outcome variables like firm survival, employment growth, and profitability growth. We find that having a capital structure that is more heavily tilted towards formal credit channels results in a greater likelihood of success. This fact holds even when we include the credit score as a measure of firm quality to guard against the possibility that unobserved factors drive both success and credit access. Our findings indicate that even if credit conditions in 2004 were unique, credit market access had an important impact on firm success.

This paper is related to a number of papers in the banking, capital structure, and entrepreneurship literature. Given the emphasis in the current work on the role of formal banking channels and trade credit, our paper is also related to the literature on the role of banks and other sources of financing for small firms (Peterson and Rajan, 1994, 1997, 2000). Cosh, Cumming and Hughes (2008) find a similarly important role for bank capital using British data, but they observe firms at a later point in their life cycle.

The remainder of the paper is as follows. We begin in Section 2 by describing the KFS in greater detail. Section 3 examines initial capital structure choices. We incorporate credit scores and other firm characteristics in Section 4. Section 5 explores multivariate regressions of capital structure on a range of business and owner characteristics to explain capital structure decisions. Section 6 explores the link between home supply

elasticity and bank debt. In Section 7 we examine how initial capital structure affects firm outcomes. Section 8 concludes.

2 The Kauffman Firm Survey

The KFS is a longitudinal survey of new businesses in the United States. This survey collected information on 4,928 firms that started in 2004 and surveys them annually. These data contain detailed information on both the firm and up to ten business owners per firm. In addition to the 2004 baseline year data there are four years of follow up data (2005 through 2007) now available. Additional years are planned. Detailed information on the firm includes industry, physical location, employment, profits, intellectual property, and financial capital (equity and debt) used at start-up and over time.

Information on up to ten owners includes age, gender, race, ethnicity, education, previous industry experience, and previous startup experience. For more information about the KFS survey design and methodology, please see Robb et. al (2009). A public-use dataset is available for download from the Kauffman Foundation's website and a more detailed confidential dataset is available to researchers through a secure, remote access data enclave provided by the National Opinion Research Center (NORC). For more details about how to access these data, please see www.kauffman.org/kfs.

A subset of the confidential dataset is used in this research—those firms that either have data for all three survey years or have been verified as going out of business in 2005, 2006 or 2007. This reduces the sample size to 3,972 businesses. The method we used for assigning owner demographics at the firm level was to define a primary owner. For firms with multiple owners (35 percent of the sample), the primary owner was designated by the largest equity share. In cases where two or more owners owned equal shares, hours worked and a series of other variables were used to create a rank ordering of owners in order to define a primary owner. (For more information on this methodology, see

Robb et. al, 2009). For this research, multi-race/ethnic owners are classified into one race/ethnicity category based on the following hierarchy: black, Asian, other, Hispanic, and white. As a result of the ordering, the white category includes only non-Hispanic white.

Tables 1 and 2 provide details on business characteristics. In Table 1, we report key features of the business—its legal form, location, and other features of operations. Roughly 36% of all businesses in the data are sole proprietorships, and about 58% are structured to provide some form of limited liability to owners. About 28% are organized as S or C corporations.

Half of the businesses in the survey operate out of the respondents home or garage; the vast majority (86%) market a service, and only a quarter of the firms in the survey have any form of intellectual property (patents, copyrights, and/or trademarks). Reflecting the fact that they are being measured at their inception, the firms are also tiny by almost any conceivable measure. Nearly 60% of the firms have no employees other than the founder, and less than 8% of firms in the sample have more than five employees in their first year of operations.

Table 2 considers the cash flow characteristics of these nascent businesses. Even though these firms are small, nearly twenty percent of firms (16.8%) have over \$100,000 in revenue in their first year. Indeed, 45% of the firms in the sample have more than \$10,000 in annual revenue in their first year. Of course, over 57% of firms have more than \$10,000 in expenses, and almost one firm in four reports zero profit or loss.

Table 3 examines owner characteristics in more detail. The entrepreneurs in our data are overwhelmingly male and white: less than one-third of respondents are female and over three-quarters are non-Hispanic white. In spite of the fact that most of the businesses in our data begin at home, in people's garages, with fewer than five employees, the overwhelming majority of business owners have at least some industry experience. Less than ten percent of owners have no previous industry experience, while more than

half have more than five years of industry experience. Likewise, more than forty percent of business owners have started a business before. More than 80% of respondents are over the age of 35 when they start their business, and roughly half the sample is aged 45 or older.

The entrepreneurs in our sample are relatively well educated. Less than 20% of respondents have less than a high school degree, while well over half of respondents have completed some form of a college degree. Finally, nearly a quarter of all respondents have received some form of advanced, post-graduate education. In broad terms, these demographics match those reported in other data sources. For example, these demographics are similar to those reported in Puri and Robinson (2008), using the Survey of Consumer Finances, and Fairlie and Robb (2007), using the Characteristics of Business Owners Survey.

3 Where do startups go for capital?

This section explores descriptive statistics about the capital structure decisions that startup firms make. To impose some structure on the details of startup fundraising, we first put forward a scheme for classifying the different types of capital available to startups.

We distinguish capital sources on two main dimensions. The first is debt vs. equity. Because we do not delve into the contractual details of VC funding agreements, simply distinguishing debt and equity serves our purposes: loans, credit cards, lines of credit and the like are classified as debt.

Next, we distinguish capital according to its source. Capital can be provided either by owners, by insiders, or by outsiders. The KFS is careful to distinguish owner equity from cash that a business owner obtained through, say, a home equity line, which in our

classification scheme, would be a source of outside debt, since it was provided through a formal contract with a lending institution. Informal financing channels include debt or equity from family members and personal affiliates of the firm, while formal financing channels include debt accessed through formal credit markets (banks, credit cards, lines of credit) as well as venture capital and angel financing.

The most notable implication of our classification scheme is that it groups together personal debt on the business owner’s household balance sheet with business bank loans, and places these under the “outside debt” category. We do this for several reasons. First, if the business is structured as a sole proprietorship, then there is no legal difference between the assets of the firm and those of the owner. Thus, for around 40% of our sample, the distinction is meaningless in the first place. But more importantly, research has shown that personal guarantees and personal collateral must often be posted to secure financing for startups (Moon, 2009; Avery, Bostic and Samalyk, 1998; Mann, 1998). This means that in the remaining 60% of the firms, the limited liability offered by incorporation would often be contractually circumvented in the borrower/lender agreement with the bank. As such, our primary distinction is not whether the debt is claim on the business owner’s household assets or her business assets, but rather, whether this debt was issued by an institution, or by friends and family.

3.1 A detailed look at capital structure

In Table 4, we use this classification scheme to provide a detailed look at the capital structure choices that nascent firms make. The thirty different sources of capital for startup businesses are grouped into the six categories described above (owner/insider/outsider \times debt/equity). Over 75% of firms have at least some owner equity; of these, the mean amount is just over \$40,500. If we include the quarter of firms with no reported owner’s equity, the average owner equity amount drops to \$31,734.

Owner debt plays a much smaller role. Only about 1/4 of firms have some form of owner personal debt, and the vast majority of this is mostly in the form of debt carried on an owner's personal credit card. The overall average amount of credit card debt used to finance startups is a modest \$5,000, but this includes the roughly 75% of owners who do not use personal credit cards to start their businesses. Among those who do, the balance is considerably larger—\$15,700, or about 1/3 of the size of owner equity. But in general, personal credit card balances make up a relatively small fraction of the startup's overall capital structure at inception—only about 4 to 5% of the firm's total capitalization is in the form personal credit card balances held by firm owners.

While owner-provided capital is heavily tilted towards equity, the capital from other sources is heavily tilted towards debt. If we include the firms with zero values, firms use about five times as much debt as they do equity. This holds for both inside debt (\$6,362) to equity (\$2,102), as well as outside debt (\$47,847) to equity (\$15,935). But seven times as many firms report outside debt as report outside equity. Yet, among those who do receive outside equity, there is no question that it is important. The average amount of outside equity among the 205 firms who access this source of financing is over \$350,000, roughly twice as large as the total financial capital for the average firm in the survey.

Turning first to insiders, we see that equity is uncommon. Only about five percent of the sample relies on equity from a spouse or other family members, and the overall average amount (including the 95% with no family equity) is only about two percent of the average funding. Yet, among the group who uses family equity, the source is important: the magnitude of insider equity is roughly the same as that of owner equity, and many times larger than the magnitude of owner debt.

Insider debt is more common, but still a small source of funding relative to outside debt and equity. The mean value of inside debt for all firms is \$6,362, and this primarily comes from personal loans received by the respondent from family and other owners. Loans directly to the business from owners or other family members are also important,

but the fact that less than ten percent of surveyed firms rely on any one type of inside debt suggests that this funding source is not commonly relied upon by new firms.

When we turn to outsider debt, we see that on average it is the largest single financing category for startups during their first year of operation. While this no doubt reflects the relative supply of outside debt to other funding sources, it is noteworthy that only a relatively small fraction of this comes from credit card balances issued to the business. Of the \$47,847 average debt level, less than \$2,500 on average comes from business credit cards.

One widely held view about entrepreneurial finance is that startups lack access to formal capital markets, and thus are forced to rely on an informal network of family, friends, and other financing sources like credit cards to bootstrap their initial financing. Table 4 speaks against this idea. First, outside capital is extremely important, even at the earliest stages of a firm's life. The average new firm has approximately \$109,000 of financial capital. Of that, roughly half comes from outside sources.

To be clear, however, informal investors do play an important role for those firms who obtain external equity funding. Looking solely at the external equity funding, of the 205 firms who received some form of external equity funding, over half received funding from outside informal investors. The average amount, around \$245,000, is roughly one-fourth the average for the handful of firms that report obtaining venture capital.³

Second, the vast majority of this outside capital comes in the form of credit, either through personal loans made directly to the owner or through business credit cards. Moreover, credit cards play a relatively small role for the average startup. If we total the average credit card holdings on all personal and business accounts associated with the business, the amount sums to less than half the average personal bank loan. If we tally the average personal bank loan and the average business bank loan, this amount is

³Some firms may indeed misclassify angel investors as venture capital, as the average amounts are quite low.

roughly four times the size of the average total credit card balances outstanding.

3.2 Capital Structure and Firm Type

Perhaps the most surprising finding in Table 4 is that formal credit channels—business and personal bank loans—are the most important sources of funding for startups. To push this observation further, we segment the data in Table 5 to report capital structure patterns for different types of startup firms.

The idea behind Table 5 is to isolate those firms that are in their very earliest stages of starting up, to see if the overall capital structure patterns hold there as well. This can be done according to a number of criteria. In the first column of Table 5, we examine the 2,425 firms who have no employees other than the founder. These firms are small relative to the average reported for all firms in Table 4—there total capital is only around \$45,000 as compared to the roughly \$110,000 in Table 4. But proportionately, outside debt plays a quite similar role: the average non-employer firm has \$19,500 in outside debt, or about 43% of its total capital, compared to approximately \$48,000, or about 44% of total capital on average for firms overall. Of the outside debt, we again see that business bank loans and personal bank loans make up the bulk of the \$19,500. Only about \$2,500 comes from other sources on average.

The second column examines the 2,168 businesses which are home-based, meaning that they do not operate any office or warehouse space outside the home. These too are small, presumably including the proverbial “garage business” as well as businesses of a professional nature that operate out of a home office. The capital structure patterns for these businesses are remarkably similar to the non-employer businesses: about forty percent of their total capital is financed through outside debt, and the lion’s share of that comes from personal and business bank loans, rather than credit card balances.

Another way to pinpoint firms at their earliest stages is to focus only on pre-revenue or pre-profit firms. We examine these firms in columns (3) and (4), respectively. These firms are considerably larger than the previous two categories, presumably because these include many firms that have secured inventories in advance of sales, or require external building space to operate. Indeed, these columns look quite similar to the averages reported in Table 4 for the whole sample.

Because the first four columns of Table 5 monotonically expand the size and scope of firms under consideration, they offer an alternative way to examine capital choice, albeit descriptively. Moving from the first column of data to the fourth column of data more than doubles the firm's size by adding an additional \$80,000 of total capital to the firm. By far the bulk of this comes from outside debt and equity, which together make up about half the increase in firm capital. Since columns (3) and (4) also contain some non-employer and home-based firms, this comparison understates the magnitude of the shift in capital structure. Thus, the comparisons across the columns of Table 5 indicate that friends and family is probably an earlier source of financing than outside debt, as previous accounts have indicated. It is just not terribly important in terms of total size.

The final two columns of Table 5 split the data according to whether the firm continued to operate throughout the first four waves of the KFS, or whether the firm ceased operations. Firms that survive look very much like the overall average reported in Table 4. On the other hand, firms that ceased operations sometime before 2007 not only began smaller, but also had considerably smaller proportions of outside debt to total capital.

Rather than focus on the firms least likely to access debt markets from a size perspective, in Table 6 we focus on firms that demonstrated an ability to access outside equity. Since here we are conditioning the sample on the presence of outside equity, we would naturally expect outside equity to play an important role for these firms. It does. For example, angel-backed firms are about 50% outside equity, and they are considerably larger than the average firm on the KFS. The ratio of outside equity to total capital

is even higher for VC-backed and corporate-equity backed firms. Notwithstanding the reliance on outside equity, these firms have large amounts of outside debt. Outside debt is the second largest source of capital for these firms, behind outside equity, for all types except corporate-backed firms. Outside debt dwarfs trade credit for these firm types, again, with the exception of corporate equity backed firms.

4 Firm Quality and Capital Structure Decisions

4.1 Credit worthiness, technology and the financing pyramid

Table 7 takes the detail of the preceding tables and boils it down to six categories: owner debt, owner equity, inside debt, inside equity, outside debt, and outside equity. These classifications are as described in the left-most column of Table 4. Reducing the amount of detail not only makes the firms' capital structure choice more apparent, it also facilitates more comparisons across different types of firms.

The rows of Table 7 are arranged from highest to lowest in terms of the overall weighted average level of 2004 funding. If we interpret the magnitudes as an indication of relative importance, then if not a pecking order, we at least see we see a clear "financing pyramid" emerge: first outside debt, then owner equity, then debt from insiders. Fourth in the pyramid is outside equity, followed by owner debt; the least used source is inside equity.

An alternative way to characterize the financing pyramid of nascent firms is to combine owner debt and equity into a single category, internal funding. Looking at capital structure this way, the average firm is roughly equal parts internal funding and outside debt. These two sources of funding are each roughly four times larger than the next largest source of financing. Regardless of how the financial pieces are assembled, outside debt plays a paramount role in funding newly founded firms.

One reason for this may simply be that outside debt is more plentiful than other sources of funding. To explore this possibility, we obtained commercial credit scores for each firm to identify high credit worthiness and low credit worthiness firms. Table 7 shows that while high credit worthiness firms have access to much more financial capital, they access capital in roughly the same proportions as low credit worthiness firms. Thus, a firm’s credit score induces a first-order shift in the level of financing it obtains, but only a second-order shift in capital structure choice it makes.

Outside equity plays a substantially more important role in the capital structure of high tech firms. Across all high tech firms, outside equity is the third largest funding source behind outside debt and owner equity. Among high tech firms with high credit scores, outside equity is the largest form of financing. It is only the low credit score firms in the high tech sector that display a capital structure that resembles the average firm in the data—but for those firms, owner equity is a more important source of financing than outside debt.

4.2 Separating credit quality from owner wealth

Of course, one reason why the capital structures of high and low credit quality firms may be so similar is that the credit scores of the business are highly correlated with those of the founders. All else equal, wealthier individuals may have higher credit scores, and simultaneously find it easier to post their own equity to start the business, leaving the overall capital structure unchanged as underlying credit quality changes.

One way to account for this possibility is to regress the firm’s credit score on variables that proxy for owner characteristics that would influence credit ratings. We consider two models. First, we run the following regression:

$$score_{ij} = \alpha + \beta_j + \epsilon_i \tag{1}$$

where $score_{ij}$ is the credit score of firm i in industry j , β_j are industry fixed effects. Thus, the first estimation simply includes a set of 60 industry dummies. If some industries faced systematically lower entry costs, this would control for the fact that individuals with systematically lower wealth levels could enter this industry to start their business.

For the second specification, we run the following regression:

$$score_{ij} = \alpha + \beta_j + \gamma_1 F_{ij} + \gamma_2 K_{ij} + \epsilon_i \quad (2)$$

where $score_{ij}$ is the credit score of firm i in industry j , β_j are industry fixed effects, and F is a vector of owner characteristics, and K is a vector of firm characteristics, both of which likely vary with demand for credit. For this specification, we include a full set of industry dummies, a set of education dummies corresponding to the breakdown presented in Table 3, and we also include factors such as race, ethnicity, industry experience, intellectual property, legal structure of the enterprise, whether the business is home-based, and whether the business sells a product or provides a service. While these coefficient estimates are interesting in their own right, a full discussion is beyond the scope of this paper. Indeed, in Robb, Fairlie and Robinson (2009) we explore the issue of race and access to credit in greater detail.

The idea behind both specifications is that by purging the credit score of variation that is linked to factors affecting personal credit scores, the remaining variation in credit score would reflect supply-side credit restrictions. Firms with high unexplained credit scores should have easier access to capital, while firms with low unexplained credit scores should have relatively more difficult access to capital. Moreover, the differences in their access to capital could reflect suppliers willingness to lend, rather than differences in capital needs.

Recovering the regression errors from these two models gives us a mechanism for classifying firms as credit constrained or unconstrained. Of course, a firm with a low

unconditional credit score is constrained, but this low score may arise endogenously because the firm has little need for external capital, low growth prospects, etc. By relying on the conditional credit score as opposed to the raw credit score, we circumvent these problems.

Table 8 reports financing choices for firms in the lowest and highest quintiles of the unexplained credit score distribution. Firms in the lowest quintile face the most severe unexplained restrictions to credit access, since their credit scores are much lower than would be predicted based on their demand characteristics. In contrast, the top quintile have the easiest access to credit, since they have high unexplained credit scores, given their access to capital.

In general, the results of Table 8 mimic the results from the previous table, in that they show a first order affect on the amount of capital raised, but only a second order effect on capital structure choice. Credit constrained firms have capital structures that look very similar to those of unconstrained firms. The primary difference is that unconstrained firms have much higher levels of capital investment.

5 Explaining Funding Decisions

Having described initial capital structure choices in detail, we now turn to the task of decomposing capital structure choice in a multivariate framework. We do this in Table 9, where we regress capital structure ratios on owner and firm characteristics. In general, Table 9 reports OLS regressions of the following form:

$$\frac{\text{Financing Category}}{\text{Total Capital}} = \alpha + \beta_j + \gamma_1 F_{ij} + \gamma_2 K_{ij} + \epsilon_i \quad (3)$$

where β_j are industry fixed effects, F is a vector of owner characteristics, and K is a vector of firm characteristics. The dependent variable in each column is a financial

ratio—either outside debt, outside equity, outside loans, or inside finance—each scaled by the firm’s total capital. (The unmeasured category is the ratio of owner financing to total capital.) Outside loans are a subset of outside debt that include only personal bank loans and business loans. The firm characteristics include not only the survey characteristics described in Tables 1-3, but also the firm’s credit score, a measure of quality that might well be unobservable to the econometrician in other circumstances, but would be readily observable to credit market participants.

Are gender and race correlated with initial capital structure choices? Table 9 suggests that this is definitely the case. First, gender: women receive significantly less outside capital than other groups. The results for women indicate that the average female-owned business holds about 5% less outside debt than the same male-owned business. Although these results may reflect the fact that women face more restricted access to capital in the credit market, the data do not allow us to rule out the possibility that, notwithstanding the industry fixed effects, female-owned businesses simply may demand less outside capital, perhaps because they are more likely to be second-income businesses.

Next, the question of race. Table 9 shows that black-owned businesses hold much less outside debt in their initial capital structure than other businesses. The magnitudes are similar to those found for gender: the ratio of outside debt to total capital is about 13% lower for black-owned businesses than for otherwise equal white-owned businesses. Whether this attributable to supply-side or demand-side considerations, it is important to note that these regressions hold constant the industry of the business, the firm’s credit quality, the owner’s education, and their prior industry and startup experience. Thus, unobserved heterogeneity in underlying business quality seems unlikely to be a first-order explanation for the difference.

We also observe other racial differences in capital structure choice. Hispanics and Asians, but not Blacks, rely heavily on inside finance.⁴ While Hispanic or Asian ethnicity

⁴This is measured as the sum of inside equity and debt.

explains little variation in access to external capital, these groups average about 25% more inside capital in their total capital structure. Given that the average firm in Table 4 has an inside-to-total capital ratio of around 12%, this effect is enormous in economic magnitude, representing a 75% increase in the average amount.

Across the board, increasing hours worked in the business is associated with greater outside and inside capital, and consequently, lower owner financing. Similarly, owner age has an increasing but concave relationship with access to external capital, for both debt and equity, while it has the opposite relationship for inside financing.

Prior experience plays an interesting role in determining initial capital structure. Owners with prior startup experience tend to rely on external equity more than others. In contrast, Table 9 indicates that owners with more industry experience rely significantly more on their own financing, since the association between industry experience and capital type is negative across all types reported in the table.

The regressions also include, but do not report, owner education. Different categories of education have similar experiences accessing external debt equity, but there is a pronounced effect associated with inside financing. Namely, those who do not finish high school are significantly more likely to rely on inside financing than other groups. Since the regressions include industry fixed effects, it is not the case that this is driven by sorting of low education respondents into industries with low capital requirements. Rather, this is probably an indication that lower quality businesses are more likely to rely on inside financing instead of accessing external capital markets.

The business characteristics reported in the bottom of the table demonstrate that firms with lower asymmetric information problems enjoy more ready access to external capital sources, and in particular, external credit funding. Home-based businesses rely more heavily on owner financing, while firms with multiple owners have larger fractions of outside-to-total capital. Comparing the point estimates in Table 9 to the averages in Table 4 suggests that multiple-owner firms receive about a ten percent increase in

the baseline amount of outside debt, and about a 25% increase in the baseline level of external equity (from around 8% to around 10%). Firms that have intellectual property are not more likely to access outside debt, but are more likely to access external equity, than those that do not.

6 Housing Markets, Bankruptcy Exemptions, and Access to Debt

In this section we explore two potential strategies for decoupling supply and demand for capital. The first is to examine housing price appreciation as a potentially exogenous source of variation in collateral that drives the availability of credit. Since housing prices are likely to be endogenous to the expected future profitability of the business ventures, we instead link housing supply elasticity to bank credit. This variable is obtained from Saiz (2010) and is based on exogenous geographical factors that affect the amount of developable land, as well as factors like zoning restrictions. Because the housing price elasticity is largely predetermined prior to 2004, it provides an exogenous source of variation in collateral values.

The data provided by Saiz (2010) contain housing supply elasticity estimates for 269 metropolitan statistical areas (MSAs) in the United States. While this includes all the major metropolitan areas in the United States, it also includes a great many smaller regions. For example, the 1st percentile of the population distribution (using the population in 2000) is less than 80,000 residents. The size of the 25th percentile is around 163,000 residents. Nevertheless, this variable does not measure the actual home price appreciation (or home ownership status) of the respondents of the KFS; it contains only a regional measure of land developability.

If housing supply were perfectly inelastic, then demand shocks would translate directly into price shocks, and home equity values would be highly sensitive to underlying changes in housing demand. In such a world, home equity would provide poor collateral for business loans, because the value of the collateral would be sensitive to factors that were outside the borrower's control. In contrast, a region with a perfectly elastic supply of housing would experience no price change whatsoever as housing demand changed. In such a world, home equity would be unaffected by fluctuations in housing demand. Thus, in regions where housing supply is elastic, we should expect to see a greater reliance on outside debt, since the underlying home equity is more pledgeable.⁵

Table 10 tests this prediction by regressing the fraction of bank capital on the housing supply elasticity, controlling for a variety of owner and business characteristics. Across the various specifications reported, increasing supply elasticity *raises* the fraction of bank debt by about 2%. To translate this into economic magnitudes, moving from the 25th to 75th percentile, which is approximately moving from Reno, Nevada to Peoria, Illinois, is associated with a 3% increase in bank debt. Since the average startup is about 40% bank financed, this effect seems economically large.

The second potential channel for decoupling supply and demand is to examine state-level bankruptcy exemptions. All else equal, borrowers in states with higher bankruptcy exemption levels should expect to receive less total outside capital in the form of bank debt, since increased bankruptcy protection impairs the collateral value of the assets they own.⁶ Since state-level bankruptcy laws are unlikely to be determined by local variation in entrepreneurial opportunity, including an exemption measure gives us another opportunity to separate credit supply from credit demand.

⁵The KFS survey instrument explicitly instructs respondents to exclude from owner's equity any cash they put into the business from home equity loans or lines of credit. The survey instrument allocates these funding sources to personal bank debt.

⁶This argument is consistent with Berkowitz and White (2004), who show that higher personal bankruptcy exemption levels are associated with more credit denials among small businesses.

Column (5) of Table 10 includes a bankruptcy exemption variable, which is the bankruptcy homestead exemption in the respondent's state of residence, in tens of thousands of dollars. Taken by itself, the variable has the expected sign, but is statistically insignificant. But Column (5) does not include credit score dummies. When we include credit score information, as in Column (7), we see that the loading on the bankruptcy exemption is both negative and statistically significant. This indicates that borrowers in states with higher bankruptcy exemptions indeed obtained a lower ratio of outside bank debt to total capital (see also Cerquero and Fabiana Penas, 2010).

7 Does Financial Access Affect Survival?

One possible explanation for our findings that certainly merits consideration is that the fact that startups rely extensively on external credit markets to fund their early life is being driven by peculiarities in the credit market in 2004.

We address this possibility in two ways. First, in Table 11 we examine the importance of debt for later-stage fundraising decisions. Is the reliance on debt a feature of the starting conditions of the business only? Do businesses wean themselves off of outside debt as they grow? Table 11 suggests not. It suggests that they continue to rely on debt in the years after the firm's founding.

Table 11 shows that, for the average firm, the fraction of new capital coming into the firm that is made up of outside debt is actually increasing as the firm matures. If anything, the fraction of owner equity falls as the firm ages. This supports life-cycle theories such as Berger and Udell (1998) in favor of the idea that startups used personal loans to kick start the business and then moved away from debt as the firm matured.

The columns of Table 11 consider different types of firms to see if the increased reliance on outside debt is particularly important for certain kinds of firms. Column (2)

reports firms that have some form of outside equity at startup. These firms typically receive a large equity injection in the first year after founding, but in the following years, they rely much more heavily on outside debt. This is consistent with outside equity being staged to coincide with milestones, but at the same time, the reliance on outside debt in 2006 and 2007 suggest that these firms too continue to rely on outside debt.

The final two columns of Table 11 look at opposite ends of the spectrum. Column (3) only considers the set of firms that are incorporated, have employees, and have assets such as inventories in the year of their founding. These firms typically have about 40% of their initial capital coming from outside debt, and this ratio grows over time. By the time of the third year (2007), the total capital coming into the firm is over 55% outside debt. And while the absolute levels of financing are considerably smaller for home-based firms (column 4), the story is very much the same: these firms rely on outside debt to an increasing degree as they age.

If our findings simply reflect the fact that credit was readily available in 2004, then there is no reason to believe that access to external credit should affect firm success.

To test this, we report Probit analysis of three key measures of growth from 2004-2007. First, we create a dummy for whether a firm has above median revenues in 2007. Then we repeat this calculation for profits and for employees. Our key explanatory variable is the ratio of outside debt to total capital. The hypothesis that we are testing is that firms with greater levels of external capital had better growth prospects.

Table 12 presents the findings. It includes the same basic set of owner and firm characteristics, plus the ratio of outside debt to total capital and the level of 2004 sales. The outside debt ratio has a positive and highly significant effect on revenue growth and employee growth, but a statistically insignificant positive effect on profit growth.

Before it is possible to attach a causal interpretation to these findings, it is important to control for unobserved characteristics that might affect access to debt and success.

In that regard, including the credit score and other firm characteristics are essential for interpreting our findings. Including the credit score allows us to conclude that controlling for firm creditworthiness, firms that accessed more external debt were nearly ten percent more likely to be in the top revenue group, and nearly six percent more likely to have hired employees. Note too that this also controls for the initial revenues the firm experienced in 2004, therefore the effect is not attributable to initial size. Table 12 indicates that, indeed, initial capital structure decisions are important for firm success.

The owner and firm characteristics, which are included as controls in Table 12, are interesting in their own right and raise many questions for future research. First, they show that female-owned businesses are significantly less likely to grow than male-owned businesses. Black-owned businesses are significantly less likely to have grown in terms of profits or sales, but they are more likely to have added employees than white-owned businesses. Asian-owned businesses are also more likely to have added employees, although Asian ownership is unrelated to revenue or profit growth. And finally, the vector of firm characteristics that might describe a firm, a priori, as a lifestyle business or not indeed predicts whether a firm has grown.

8 Conclusions

This paper uses a novel data set to explore the capital structure decisions that firms make in their initial year of operation. In the vast majority of cases, this is when the firms in question are still being incubated in their founders' homes or garages, before outside employees have joined the firm in any significant number, and certainly well before the firms in question would be attractive to the types of funding sources that are the focus of most discussions of early stage financing.

In spite of the fact that these firms are at their very beginning of life, they rely to a surprising degree on bank debt. Partly this is a function of the availability of bank

debt: in regions that experienced an increase in the supply of home loans, startups relied to a larger extent on bank debt. Higher quality firms operate at a larger scale in part because they can access larger amounts of bank financing.

The notion that startups commonly rely on the beneficence of a loose coalition of family and friends seems misleading given our findings. While the data suggest that informal investors are important for the handful of firms that rely on outside equity at their startup, the data also indicate that most firms turn elsewhere for their initial capital. Indeed, roughly 80-90% of most firms' startup capital is made up in equal parts of owner equity and bank debt.

To be sure, our findings underscore the importance of liquid credit markets for the formation and success of young firms. Because startups rely so extensively on outside debt as a source of startup capital, they are especially sensitive to changes in bank lending conditions, perhaps more sensitive than would be suggested based on accounts of entrepreneurial finance that focus on the importance of informal capital.

References

- [1] Avery, Robert B. and Raphael W. Bostic and Katherine A. Samolyk, 1998. "The role of personal wealth in small business finance," *Journal of Banking and Finance*, vol. 22, pp. 1019 - 1061.
- [2] Berkowitz, Jeremy and Michelle J. White, 2004. "Bankruptcy and small firms' access to credit," *RAND Journal of Economics*, vol. 35, no. 1, Spring. pp. 69-84.
- [3] Cerqueiros, Geraldo and Maria Fabiana Penas, 2010. "Debtor protection and start-up financing sources: evidence from the US" Working Paper, Tilburg University.
- [4] Cosh, Andrew, Douglas Cumming and Alan Hughes, 2008. "Outside Entrepreneurial Capital," forthcoming, *Economic Journal*.
- [5] Fairlie, Robert and Harry Krashinsky, 2007. "Liquidity Constraints, Household Wealth, and Entrepreneurship Revisited," working paper, University of California, Santa Cruz.
- [6] Fairlie, Robert and Alicia Robb, 2008. "Why are Black-Owned Businesses Less Successful than White-Owned Businesses: The Role of Families, Inheritances, and Business Human Capital," *Journal of Labor Economics*, 25(2): 289-323.
- [7] Faulkender, Michael and Mitchell Peterson, 2006. "Does the source of capital affect capital structure?" *Review of Financial Studies*, vol. 19, pp. 45-79.
- [8] Gompers, Paul and Josh Lerner, 2001. "The venture capital revolution." *Journal of Economic Perspectives*.
- [9] Helwege, Jean and N. Liang, 1996. "Is there a pecking order? Evidence from a panel of IPO firms." *Journal of Financial Economics*, vol 40, no. 429-458.
- [10] Hurst, Erik and Annamaria Lusardi, 2004. Liquidity Constraints, Household Wealth, and Entrepreneurship, *Journal of Political Economy*, vol. 112.

- [11] Kaplan, Steven N., Berk Sensoy, and Per J. Strömberg, 2009. “Should investors bet on the jockey or the horse? Evidence from the evolution of firms from early business plans to public companies.” Forthcoming, *Journal of Finance*.
- [12] Lemman, Michael L., Michael R. Roberts and Jaime F. Zender, 2008. “Back to the beginning: persistence and the cross-section of corporate capital structure,” *Journal of Finance*, vol 63, no 4, pp. 1575-1603.
- [13] Mann, Ronald J., 1998. “Comment on Avery, Bostic and Samolyk” *Journal of Banking and Finance*, vol. 22, pp. 1062-1066.
- [14] Moon, John, 2009. “Small business finance and personal assets,” *Community Investments*, vol. 21, issue 3, Winter 2009/2010.
- [15] Myers, Steward and Nicholas Majluf, 1984. Financing and investment decisions when firms have information markets do not have, *Journal of Financial Economics*, vol. 13, no. 2, pp. 187-221.
- [16] Peterson, Mitchell and Raghuram Rajan, 2000. “Does distance still matter? The information revolution in small business lending,” NBER Working Paper #7685.
- [17] Peterson, Mitchell and Raghuram Rajan, 1994. “The benefits of lending relationships: evidence from small business lending,” *Journal of Finance*, vol. 49, no. 1, pp 3-37.
- [18] Peterson, Mitchell and Raghuram Rajan, 1997. “Trade credit: theories and evidence,” *Review of Financial Studies*, vol. 10, no. 3, pp 661-691.
- [19] Puri, Manju and David T. Robinson, 2008. “Optimism and Economic Choice,” *Journal of Financial Economics*, vol. 86, no. 1, 71-99.
- [20] Rajan, Raghuram and Luigi Zingales, 1995. “What do we know about capital structure? Some evidence from international data,” *Journal of Finance*, vol. 50, no. 5, pp. 1421-1460.

- Robb, A., Ballou, J., Barton, T., DesRoches, D., Potter, F., Reedy, E.J., & Zhao, Z. (2009). An Overview of the Kauffman Firm Survey: Results from the 2004-2007 Data. Kauffman Foundation.
- [21] Robb, Alicia M., Robert Fairlie and David T. Robinson, 2009. "Capital Injections among New Black and White Business Ventures: Evidence from the Kauffman Firm Survey," Working paper.
- [22] Saiz, Albert (forthcoming) "The Geographic Determinants of Housing Supply" *Quarterly Journal of Economics*.
- [23] Shyam Sunder and Stewart Myers, 1999. "Testing static tradeoff against pecking order models of capital structure, *Journal of Financial Economics*, vol 51.
- [24] Wong, Andrew, 2003. "Angel finance: the 'other' venture capital." PhD dissertation, University of Chicago.

Table 1: Business Characteristics

Sample includes 3,972 firms that either survived over the 2004-2007 period or were verified as going out of business over the same period. Corporation includes C- or S-corporations. Limited liability corporation includes LLC or LLP designations. Home based business means that the primary business location was the same as the owner's home. Credit score is a quintile score of the credit quality of the business.

	Weighted Percentage
<hr/>	
Business Legal Status	
Sole Proprietorship	0.360
Partnership	0.057
Corporation	0.277
Limited Liability Corporation	0.306
 Business Location	
Home Based	0.500
Leased Space	0.396
Other	0.104
 Business Product/Service Offerings	
Service Offered	0.858
Product Offered	0.516
Business Offers Both Service(s)/Product(s)	0.378
 Intellectual Property	
Patents	0.022
Copyrights	0.086
Trademarks	0.137
 Employment Size	
Zero	59.2
1	14.0
2	9.1
3	4.6
4-5	5.8
6-10	3.9
11+	3.6
 Credit Score	
High Credit Score	0.115
Medium Credit Score	0.553
Low Credit Score	0.332
<hr/>	

Table 2: Cash flow characteristics of startups in the KFS

Sample includes 3,972 firms that either survived over the 2004-2007 period or were verified as going out of business over the same period. Panel A refers to the distribution of revenues and expenses, while Panel B refers to the distribution of profits and losses. In Panel B, 44.5% of the sample reported earning profits, of whom 19.4% indicated approximately zero profits; likewise, 55.5% reported losses, of whom around 3.4% reported zero loss.

Panel A: Percent of Businesses by Revenues and Expenses			
Revenues	Weighted Percentage	Expenses	Weighted Percentage
Zero	35.3%	Zero	6.7%
\$1,000 or less	5.1%	\$1,000 or less	8.5%
\$1,001- \$5,000	7.7%	\$1,001- \$5,000	16.0%
\$5,001- \$10,000	6.1%	\$5,001- \$10,000	11.3%
\$10,001- \$25,000	10.5%	\$10,001- \$25,000	16.2%
\$25,001- \$100,000	18.6%	\$25,001- \$100,000	25.3%
\$100,001 or more	16.8%	\$100,001 or more	15.8%

Panel B: Percent of Businesses by Amount of Profits or Losses			
Profit (44.5 %)	Weighted Percentage	Loss (55.5%)	Weighted Percentage
Zero	19.4%	Zero	3.4%
\$1,000 or less	10.2%	\$1,000 or less	13.2%
\$1,001- \$5,000	16.4%	\$1,001- \$5,000	27.3%
\$5,001- \$10,000	12.5%	\$5,001- \$10,000	17.0%
\$10,001- \$25,000	17.4%	\$10,001- \$25,000	17.9%
\$25,001- \$100,000	20.0%	\$25,001- \$100,000	16.9%
\$100,001 or more	4.1%	\$100,001 or more	4.2%

Table 3: Business owner demographics

Sample includes 3,972 firms that either survived over the 2004-2007 period or were verified as going out of business over the same period.

Characteristics	Weighted Percentage	Characteristics:	Weighted Percentage
Male	69.2		
Female	30.8	Industry Exp. (Yrs.)	
		Zero	9.8
White	79.3	1-2	13.9
Black	8.6	3-5	15.6
Asian	4.2	6-9	9.9
Others	2.3	10-14	13.6
		15-19	11.3
Non-Hispanic	94.5	20-24	9.3
Hispanic	5.5	25-29	7.5
		30+	9.3
Owner Age			
24 or younger	1.3		
25-34	16.5	Previous Start-ups	
35-44	33.6	0	57.5
45-54	29.0	1	21.5
55 or older	19.6	2	10.2
		3	5.0
Owner Education		4 or more	5.8
HS Grad or Less	13.9		
Tech/Trade/Voc. Deg.	6.4		
Some Coll., no deg.	21.8	Hours Worked	
Associate's	8.6	Less than 20	18.5
Bachelor's	25.3	20-35	19.5
Some Grad, No Deg.	5.9	36-45	14.3
Master's Degree	13.4	46-55	15.2
Professional/Doctorate	4.7	56 or more	32.5

Table 4: Sources of Financing for 2004 Startups

Sample includes 3,972 firms that either survived over the 2004-2007 period or were verified as going out of business over the same period. The mean, in dollars, for all firms is reported in the first column. The second column reports the mean, in dollars, for only firms with positive amounts of that source of funding. The sample size for that source of funding is reported in the third column.

Category	Funding Source	Grand Mean	Mean if > 0	Count
Owner Equity		31,734	40,536	3,093
Owner Debt		5,037	15,765	1,241
	Personal CC balance, resp.	2,811	9,375	1,158
	Personal loan, other owners	1,989	124,124	67
	Personal CC balance, others	238	7,415	132
Insider Equity		2,102	44,956	177
	Parent Equity	1,456	42,509	126
	Spouse Equity	646	40,436	62
Insider Debt		6,362	47,873	480
	Personal Loan from family	2,749	29,232	327
	Business loan from family	1,760	57,207	115
	Family loan to other owners	284	34,509	29
	Personal loan to other owners	550	28,988	73
	Other personal loans	924	81,452	45
	Business loan by owner	15	9,411	5
	Business loan by emp.	79	22,198	9
Outsider Equity		15,935	354,540	205
	Angel investors	6,350	244,707	110
	Venture Capital	4,804	1,162,898	26
	Business equity	3,645	321,351	56
	Govt. equity	798	146,624	27
	Other equity	337	187,046	8
Outsider Debt		47,847	128,706	1,439
	Business bank loan	17,075	261,358	243
	Personal bank loan	15,859	92,433	641
	Credit line balance	5,057	95,058	210
	Non-bank bus. Loan	3,627	214,920	72
	Personal bank loan by other owners	1,859	80,650	92
	Govt. bus. Loan	1,331	154,743	34
	Owner bus. CC balance	1,009	7,107	543
	Bus. CC balance	812	6,976	452
	Other Bus. CC balance	135	7,852	62
	Other bus. Loan	231	78,281	19
	Other individual loan	226	43,202	22
	Other debt	626	119,493	22
Total Financial Capital		109,016	121,981	3,972
Trade credit	32	21,793	93,536	838

Table 5: Sources of Financing for 2004 Startups by Firm Type

This sample includes the 3,972 firms that either survived over the 2004-2007 period or were verified as going out of business over the same period. Non-employer means the firm had no employees apart from the owner. Home-based means that the firm did not have a place of business outside the owner's home.

Funding Source	Non- Employer	Home- Based	Pre- Revenue	Pre- Profits	Survived thru 2006	Closed by 2006
Owner Equity	\$17,269	\$20,035	\$31,201	\$35,433	\$31,784	\$31,609
Owner Debt	\$2,318	\$2,624	\$3,720	\$5,445	\$4,896	\$5,392
Personal Credit Card -Owner	\$1,896	\$2,093	\$1,937	\$3,499	\$2,634	\$3,256
Personal Credit Card-Other Owners	\$159	\$218	\$133	\$305	\$217	\$291
Insider Equity	\$698	\$1,024	\$2,271	\$2,553	\$1,705	\$3,101
Spouse Equity	\$270	\$215	\$612	\$638	\$468	\$1,094
Parent Equity	\$428	\$809	\$1,659	\$1,915	\$1,237	\$2,007
Insider Debt	\$2,381	\$3,074	\$6,456	\$7,852	\$5,856	\$7,635
Personal Family Loan	\$1,051	\$1,683	\$2,451	\$3,342	\$2,437	\$3,535
Business Loan from family	\$350	\$580	\$2,114	\$2,335	\$1,481	\$2,464
Other Personal Loan	\$475	\$302	\$1,233	\$1,177	\$1,191	\$252
Outsider Equity	\$2,774	\$4,731	\$16,268	\$21,530	\$18,753	\$8,841
Other Informal Investors	\$785	\$2,489	\$7,006	\$9,704	\$7,992	\$2,218
Other Business Equity	\$1,529	\$1,568	\$4,539	\$4,727	\$3,840	\$3,155
Government Equity	\$10	\$226	\$550	\$945	\$1,083	\$81
Venture Capital Equity	\$441	\$443	\$4,164	\$5,618	\$5,373	\$3,373
Outsider Debt	\$19,353	\$26,960	\$44,839	\$54,536	\$50,087	\$42,208
Personal Bank Loan	\$11,453	\$12,898	\$12,962	\$17,738	\$17,416	\$11,941
Bank Business Loan	\$5,231	\$9,180	\$18,474	\$21,160	\$18,653	\$13,103
Credit Line	\$341	\$656	\$2,986	\$4,823	\$5,061	\$5,047
Total Financial Capital	\$44,793	\$58,448	\$104,755	\$127,349	\$113,080	\$98,787
Trade Credit	\$6,883	\$5,537	\$4,825	\$14,640	\$22,684	\$16,642
Observations	2,425	2,168	1,615	2,144	3,390	773

Table 6: Do Equity-backed Firms Embrace or Eschew Debt?

Each column in this table reports capital structure decisions for firms with different types of outside equity. Thus, the sample size of each column is reported in the third row of Table 4, in the "Outside Equity" section. Amounts are averages over all firms that had the type of funding in the column header in 2004. Some subcategories are suppressed for brevity, but they are included in the totals reported in each category.

Source	Angel	VC	Corporate	Govt-Other
Owner Equity	\$116,792	\$119,459	\$105,062	\$47,062
Insider Equity	\$12,948	\$4,278	\$5,346	\$5,521
Spouse Equity	\$1,080	\$0	\$3,507	\$58
Parent Equity	\$11,868	\$4,278	\$1,839	\$5,463
Outsider Equity	\$328,999	\$1,499,644	\$515,051	\$171,145
Other Informal Investors	\$244,707	\$126,811	\$183,110	\$9,901
Other Business Equity	\$60,568	\$209,130	\$321,351	\$4,335
Government Equity	\$6,488	\$804	\$443	\$110,147
Venture Capital Equity	\$17,084	\$1,162,898	\$10,148	\$229
Other Equity	\$151	\$0	\$0	\$46,533
Owner Debt	\$19,558	\$9,949	\$13,041	\$5,450
Insider Debt	\$15,997	\$32,365	\$9,033	\$3,109
Personal Family Loan	\$8,196	\$4,051	\$4,008	\$190
Personal Family Loan-other owners	\$651	\$0	\$2,098	\$257
Other Personal Loan	\$1,033	\$15,862	\$878	\$0
Other Personal Funding	\$4,567	\$12,452	\$860	\$0
Other Personal Owner Loan	\$14,139	\$6,176	\$4,668	\$0
Outsider Debt	\$164,891	\$628,398	\$75,156	\$96,030
Personal Bank Loan	\$21,629	\$286,853	\$23,295	\$8,046
Bank Business Loan	\$67,728	\$299,169	\$28,882	\$56,094
Credit Line	\$25,590	\$1,216	\$5,855	\$1,918
Other Non-Bank Loan	\$17,359	\$19,005	\$2,752	\$0
Other Bank Loan	\$10,416	\$128	\$6,513	\$2,080
Government Business Loan	\$352	\$402	\$0	\$22,219
Other Individual Loan	\$3,402	\$12,170	\$73	\$420
Other Business Debt	\$14,491	\$0	\$0	\$4,049
Total Financial Capital	\$659,184	\$2,294,093	\$722,690	\$328,316
Trade Credit	\$73,272	\$161,417	\$129,815	\$168,277

Table 7: Credit quality and capital structure

Source: Kauffman Firm Survey Microdata. Sample includes only surviving firms over the 2004-2007 period and firms that have been verified as going out of business over the same period. Sample size 3,972. This table reports mean levels of 2004 startup funding by type of funding. The first column matches the category-level data reported in the previous table. The remaining columns report breakdowns for various types of firms. Columns 2 and 3 focus on firms with high and low Dun and Bradstreet credit scores. The final three columns repeat the first three, but only examine high-tech firms.

	All firms:			Only High Technology firms:		
	All	High credit	Low credit	All Tech	High credit	Low credit
Owner Equity	\$31,734	\$53,994	\$21,199	\$27,875	\$57,655	\$17,122
Owner Debt	\$5,037	\$8,926	\$3,245	\$7,000	\$28,760	\$3,774
Insider Equity	\$2,102	\$6,190	\$1,316	\$4,503	\$16,508	\$252
Insider Debt	\$6,362	\$13,738	\$5,088	\$3,412	\$6,860	\$1,963
Outsider Equity	\$15,935	\$41,527	\$6,225	\$53,736	\$136,945	\$215
Outsider Debt	\$47,847	\$112,803	\$26,492	\$29,478	\$115,590	\$6,013
Total						
Financial Capital	\$109,016	\$237,179	\$63,565	\$126,005	\$362,317	\$29,339
N	3972	472	1264	532	85	109

Table 8: Capital structure differences between High Residual Credit and Low Residual Credit firms

Panel A reports capital structure based on quintiles from the residuals of regression of credit scores on industry fixed effects. A total of 60 industry dummies are included. Panel B reports capital structure averages according to quintiles from the residuals of regressions of the following form:

$$score_{ij} = \alpha + \beta_j + \gamma_1 F_{ij} + \gamma_2 K_{ij} + \epsilon_i \quad (4)$$

where $score_{ij}$ is the credit score of firm i in industry j , β_j are industry fixed effects, and F is a vector of owner characteristics, and K is a vector of firm characteristics. For this specification, we include a full set of industry dummies, a set of education dummies corresponding to the breakdown presented in Table 3, and we also include factors such as race, ethnicity, industry experience, intellectual property, legal structure of the enterprise, whether the business is home-based, and whether the business sells a product or provides a service.

Panel A: Regression based on INDUSTRY CONTROLS								
	Overall		Bottom Quintile		Top Quintile		Difference	
	Mean	Percent	Mean	Percent	Mean	Percent	Mean	Percent
Owner Equity	27,365	35%	39,503	32%	18,672	35%	20,831	-4%
Insider Equity	1,695	2%	3,012	2%	1,497	3%	1,515	0%
Outsider Equity	6,979	9%	14,194	11%	4,117	8%	10,078	4%
Owner Debt	3,506	4%	3,649	3%	3,351	6%	298	-3%
Insider Debt	7,605	10%	13,023	10%	6,574	12%	6,449	-2%
Outsider Debt	31,255	40%	51,621	41%	18,758	35%	32,863	6%
Total Capital	78,406	100%	125,002	100%	52,969	100%	72,033	0%
% Zero Capital	10%		9%		12%		3%	

Panel B: Regression based on FULL MODEL								
	Overall		Bottom Quintile		Top Quintile		Difference	
	Mean	Percent	Mean	Percent	Mean	Percent	Mean	Percent
Owner Equity	27,365	34.9%	33,970	32.5%	24,085	33.9%	9,885	-1%
Insider Equity	1,695	2.2%	2,102	2.0%	1,660	2.3%	442	0%
Outsider Equity	6,979	8.9%	8,392	8.0%	6,622	9.3%	1,770	-1%
Owner Debt	3,506	4.5%	3,431	3.3%	3,848	5.4%	(417)	-2%
Insider Debt	7,605	9.7%	11,738	11.2%	7,181	10.1%	4,558	1%
Outsider Debt	31,255	39.9%	45,014	43.0%	27,648	38.9%	17,366	4%
Total Capital	78,406	100.0%	104,648	100.0%	71,043	100.0%	33,604	0%
Zero Capital	10%		9%		9%		0%	

Table 9: Explaining Capital Structure Ratios for Startups

Sample includes 3,972 firms that either survived over the 2004-2007 period or were verified as going out of business over the same period. The dependent variable in each column is the ratio of that form of capital to total financial capital (excluding trade credit). Bank debt includes personal loans for business as well as business bank loans, but excludes the other sources of outside debt. Inside finance is the sum of inside debt and equity. Outside debt encompasses column (1) but also includes the other sources of outside debt. Outside equity includes VC, angel, gov't, business equity, and other outside equity. Robust standard errors in parentheses. 2-digit industry dummies and owner education dummies included. *** p<0.01, ** p<0.05, * p<0.1.

	Ratios of Financing Source to Total Capital:			
	Bank debt	Inside Finance	Outside Debt	Outside Equity
Black	-0.166** (0.0827)	0.162** (0.0681)	-0.127** (0.0600)	-0.0512 (0.153)
Asian	-0.0553 (0.108)	0.246** (0.101)	-0.0380 (0.0814)	-0.0135 (0.188)
Other	-0.0879 (0.143)	0.183 (0.122)	-0.0210 (0.0975)	-0.0972 (0.350)
Hispanic	-0.00336 (0.0927)	0.253*** (0.0888)	-0.0129 (0.0702)	-0.267 (0.203)
Female	-0.0586 (0.0483)	0.0115 (0.0502)	-0.0505 (0.0363)	-0.260*** (0.0978)
Hours worked	0.00267*** (0.000897)	0.00681*** (0.000895)	0.00267*** (0.000675)	0.00385** (0.00157)
Age	0.0265* (0.0135)	-0.0267** (0.0132)	0.0228** (0.00948)	0.0509* (0.0274)
Age ²	-0.000250* (0.000142)	0.000195 (0.000142)	-0.000237** (0.0000997)	-0.000517* (0.000284)
Work Experience	-0.00671*** (0.00212)	-0.00582** (0.00241)	-0.00447*** (0.00161)	-0.00181 (0.00382)
Startup Experience	0.0536 (0.0431)	0.0204 (0.0437)	0.0162 (0.0321)	0.0237 (0.0772)
Multiple Owners	0.174*** (0.0425)	0.0471 (0.0446)	0.137*** (0.0316)	0.684*** (0.0834)
Credit Score	0.00436*** (0.000918)	0.000139 (0.000959)	0.00355*** (0.000679)	0.000791 (0.00165)
Intellectual Property	-0.0524 (0.0507)	0.0968* (0.0521)	-0.0481 (0.0380)	0.210*** (0.0805)
Comparative Adv.	-0.0189 (0.0456)	0.0240 (0.0491)	0.0197 (0.0344)	-0.0690 (0.0815)
Sells product	0.121* (0.0729)	-0.00448 (0.0792)	0.0527 (0.0545)	-0.0725 (0.120)
Sells Prod. & Serv.	-0.0123 (0.0656)	0.0236 (0.0726)	0.00560 (0.0495)	-0.0193 (0.103)
Observations	3418	3418	3418	3418

Table 10: Elasticity of Housing Supply and Reliance on Bank Debt

The dependent variable in each column is the ratio of bank debt to total financial capital. The key independent variable is the elasticity of housing supply, taken from Saiz (2010). This variable measures the availability of land in an MSA as a function of both exogenous geographical barriers to growth, and endogenous barriers to development. High supply elasticities mean that the supply of housing has a large response to a change in the price of housing, which in turn means that areas with high elasticity saw rapid growth in housing stock during the housing bubble. The state exemption variable is the level of the homestead exemption in the state of each respondent's residence, in tens of thousands of dollars. Each of the seven alternative specifications includes different control variables, as indicated below.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Home supply elasticity	0.0163*** (0.0058)	0.0156*** (0.0058)	0.0153*** (0.0059)	0.0149** (0.0058)		0.0150*** (0.0058)	0.0163*** (0.0058)
State bankruptcy exemption					-1.92 (1.33)		-2.52* (1.48)
Industry Dummies	No	Yes	No	Yes	Yes	Yes	Yes
Owner Characteristics	No	No	Yes	Yes	Yes	Yes	Yes
Credit score dummies	No	No	No	No	No	Yes	Yes
Observations	2,564	2,564	2,466	2,466	3,389	2,466	2,466
R-squared	0.004	0.029	0.040	0.058	0.048	0.061	0.062

Standard errors in parentheses

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

Table 11: Time-series evidence on the importance of formal debt

Each column in this table reports the average for the subset of firms with the characteristics described in the column header. Column classifications are based on 2004. Column 3 is the set of firms that are incorporated, have at least one employee other than the founder, and have assets such as inventories. Home-based businesses are ones that report operating out of the founders' home.

	All Firms	Firm Has Outside Equity	Inc./Employees/ Asset-backed	Home-based Non-employers
<u>Panel A: Initial (2004) Baseline</u>				
Owner Equity	\$31,734	\$92,806	\$72,170	\$14,652
Insider Equity	\$2,102	\$9,205	\$6,733	\$658
Outsider Equity	\$15,935	\$354,540	\$57,428	\$3,086
Owner Debt	\$5,037	\$14,320	\$12,730	\$2,045
Insider Debt	\$6,362	\$12,825	\$15,781	\$2,129
Outsider Debt	\$47,847	\$179,710	\$120,843	\$21,802
Total Financial Capital	\$109,016	\$663,407	\$285,686	\$44,371
<u>Panel B: First (2005) Capital Injection</u>				
Owner Equity	\$15,352	\$41,040	\$33,855	\$4,795
Insider Equity	\$1,782	\$1,426	\$4,992	\$420
Outsider Equity	\$19,718	\$275,713	\$70,438	\$658
Owner Debt	\$4,447	\$7,712	\$6,107	\$1,849
Insider Debt	\$5,423	\$11,792	\$11,494	\$913
Outsider Debt	\$45,237	\$137,049	\$102,092	\$19,003
Total Injection	\$91,959	\$474,732	\$228,978	\$27,637
<u>Panel C: Second (2006) Capital Injection</u>				
Owner Equity	\$10,540	\$38,720	\$27,599	\$4,848
Insider Equity	\$585	\$770	\$2,182	\$34
Outsider Equity	\$10,033	\$79,265	\$38,656	\$2,284
Owner Debt	\$3,159	\$7,075	\$7,519	\$1,942
Insider Debt	\$4,241	\$12,103	\$10,345	\$584
Outsider Debt	\$42,326	\$309,176	\$135,750	\$16,055
Total Injection	\$70,884	\$447,109	\$222,051	\$25,746
<u>Panel D: Third (2007) Capital Injection</u>				
Owner Equity	\$8,210	\$23,817	\$19,224	\$4,674
Insider Equity	\$1,029	\$8,513	\$4,710	\$148
Outsider Equity	\$7,801	\$92,488	\$38,496	\$433
Owner Debt	\$3,155	\$10,370	\$7,776	\$1,852
Insider Debt	\$3,394	\$20,990	\$12,908	\$535
Outsider Debt	\$35,706	\$90,086	\$105,758	\$18,930
Total Injection	\$59,295	\$246,264	\$188,873	\$26,571

Table 12: Capital Structure Choices and Firm Outcomes

This table reports probit regressions in which the dependent variable is a dummy for whether each performance metric is above the sample median in 2007. 2-digit industry dummies, owner age, age², and education dummies included. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

	DV is dummy for above sample median:			
	Revenue	Assets	Profits	Employee
2004 log Revenue	0.0843*** (0.0117)	0.0267** (0.0119)	0.0512*** (0.0102)	0.0313*** (0.0104)
Outside debt ratio	0.420** (0.172)	1.256*** (0.214)	0.148 (0.162)	0.318* (0.165)
Black	-0.609*** (0.235)	-0.592*** (0.215)	-0.616*** (0.194)	0.398* (0.209)
Asian	0.455 (0.282)	0.149 (0.294)	0.276 (0.250)	0.547** (0.261)
Other	-0.741* (0.381)	-0.133 (0.436)	-0.226 (0.382)	0.620* (0.351)
Hispanic	-0.365 (0.263)	-0.505** (0.256)	-0.341 (0.246)	0.292 (0.265)
Female	-0.597*** (0.132)	-0.572*** (0.131)	-0.351*** (0.117)	-0.278** (0.116)
Hours Worked	0.0182*** (0.00251)	0.0202*** (0.00269)	0.00771*** (0.00223)	0.0164*** (0.00241)
Work Experience	0.0179*** (0.00598)	0.00953 (0.00602)	0.0162*** (0.00523)	0.0157*** (0.00545)
Startup Experience	0.0540 (0.117)	0.151 (0.118)	-0.184* (0.104)	0.229** (0.107)
Multiple Owners	0.690*** (0.115)	0.718*** (0.130)	0.0396 (0.107)	0.382*** (0.109)
Credit Score	0.0149*** (0.00248)	0.0151*** (0.00275)	0.00863*** (0.00226)	0.0144*** (0.00233)
Intellectual Property	-0.00931 (0.138)	-0.0552 (0.151)	-0.532*** (0.129)	-0.103 (0.130)
Comparative Adv.	0.202* (0.121)	0.196 (0.127)	0.162 (0.109)	0.0931 (0.109)
Sells Product	-0.367* (0.207)	0.118 (0.225)	-0.415** (0.186)	0.0241 (0.191)
Sells Prod. & Serv.	0.405** (0.189)	0.0772 (0.209)	0.174 (0.171)	0.146 (0.176)
Observations	2507	2507	2507	2507

A Unabridged tables

This appendix contains the unabridged versions of Tables 5 and 6, and 8.

Table 13: Sources of Financing for 2004 Startups by Firm Type

Funding Source	Non-Employer	Home-Based	Pre-Revenue	Pre-Profits	Survived thru 2006	Closed by 2006
Owner Equity	\$17,269	\$20,035	\$31,201	\$35,433	\$31,784	\$31,609
Owner Debt	\$2,318	\$2,624	\$3,720	\$5,445	\$4,896	\$5,392
Personal Credit Card -Owner	\$1,896	\$2,093	\$1,937	\$3,499	\$2,634	\$3,256
Personal Credit Card-Other Owners	\$159	\$218	\$133	\$305	\$217	\$291
Insider Equity	\$698	\$1,024	\$2,271	\$2,553	\$1,705	\$3,101
Spouse Equity	\$270	\$215	\$612	\$638	\$468	\$1,094
Parent Equity	\$428	\$809	\$1,659	\$1,915	\$1,237	\$2,007
Insider Debt	\$2,381	\$3,074	\$6,456	\$7,852	\$5,856	\$7,635
Personal Family Loan	\$1,051	\$1,683	\$2,451	\$3,342	\$2,437	\$3,535
Personal Family Loan-other owners	\$194	\$144	\$260	\$244	\$220	\$445
Business Loan from family	\$350	\$580	\$2,114	\$2,335	\$1,481	\$2,464
Business Loan from Owner	\$0	\$0	\$3	\$24	\$5	\$39
Other Personal Loan	\$475	\$302	\$1,233	\$1,177	\$1,191	\$252
Other Personal Funding	\$300	\$366	\$388	\$598	\$422	\$873
Business Loan from Employee(s)	\$11	\$0	\$7	\$130	\$100	\$27
Outsider Equity	\$2,774	\$4,731	\$16,268	\$21,530	\$18,753	\$8,841
Other Informal Investors	\$785	\$2,489	\$7,006	\$9,704	\$7,992	\$2,218
Other Business Equity	\$1,529	\$1,568	\$4,539	\$4,727	\$3,840	\$3,155
Government Equity	\$10	\$226	\$550	\$945	\$1,083	\$81
Venture Capital Equity	\$441	\$443	\$4,164	\$5,618	\$5,373	\$3,373
Other Equity	\$9	\$5	\$9	\$537	\$466	\$14
Outsider Debt	\$19,353	\$26,960	\$44,839	\$54,536	\$50,087	\$42,208
Personal Bank Loan	\$11,453	\$12,898	\$12,962	\$17,738	\$17,416	\$11,941
Business Credit Card	\$577	\$561	\$683	\$1,094	\$969	\$1,107
Other Personal Owner Loan	\$263	\$314	\$1,650	\$1,641	\$2,046	\$1,845
Business Credit Card-other owners	\$25	\$53	\$44	\$187	\$100	\$225
Business Credit Cards	\$538	\$460	\$460	\$946	\$826	\$776
Bank Business Loan	\$5,231	\$9,180	\$18,474	\$21,160	\$18,653	\$13,103
Credit Line	\$341	\$656	\$2,986	\$4,823	\$5,061	\$5,047
Other Non-Bank Loan	\$296	\$1,044	\$4,970	\$3,229	\$2,311	\$6,941
Government Business Loan	\$58	\$309	\$1,925	\$1,671	\$1,514	\$871
Other Business Loan	\$145	\$324	\$36	\$232	\$303	\$52
Other Bank Loan	\$369	\$1,193	\$1,316	\$2,247	\$2,045	\$1,391
Other Individual Loan	\$146	\$146	\$15	\$198	\$236	\$201
Other Business Debt	\$176	\$135	\$967	\$1,010	\$655	\$553
Total Financial Capital	\$44,793	\$58,448	\$104,755	\$127,349	\$113,080	\$98,787
Observations	2,425	2,168	1,615	2,144	3,390	773

Source: Kauffman Firm Survey Microdata. Sample includes only surviving firms over the 2004-2007 period and firms that have been verified as going out of business over the same period. Sample size 3,972.

Table 14: Do Equity-backed Firms Embrace or Eschew Debt?

Each column in this table reports capital structure decisions for firms with different types of outside equity. Thus, the sample size of each column is reported in the third row of Table 4, in the "Outside Equity" section. Amounts are averages over all firms that had the type of funding in the column header in 2004. Some subcategories are suppressed for brevity, but they are included in the totals reported in each category.

Source	Angel	VC	Corporate	Govt-Other
Owner Equity	\$116,792	\$119,459	\$105,062	\$47,062
Insider Equity	\$12,948	\$4,278	\$5,346	\$5,521
Spouse Equity	\$1,080	\$0	\$3,507	\$58
Parent Equity	\$11,868	\$4,278	\$1,839	\$5,463
Outsider Equity	\$328,999	\$1,499,644	\$515,051	\$171,145
Other Informal Investors	\$244,707	\$126,811	\$183,110	\$9,901
Other Business Equity	\$60,568	\$209,130	\$321,351	\$4,335
Government Equity	\$6,488	\$804	\$443	\$110,147
Venture Capital Equity	\$17,084	\$1,162,898	\$10,148	\$229
Other Equity	\$151	\$0	\$0	\$46,533
Owner Debt	\$19,558	\$9,949	\$13,041	\$5,450
Personal Credit Card -Owner	\$4,877	\$3,749	\$7,686	\$4,882
Personal Credit Card-Other Owners	\$543	\$24	\$688	\$568
Insider Debt	\$15,997	\$32,365	\$9,033	\$3,109
Personal Family Loan	\$8,196	\$4,051	\$4,008	\$190
Personal Family Loan-other owners	\$651	\$0	\$2,098	\$257
Business Loan from family	\$1,091	\$0	\$1,189	\$2,662
Business Loan from Owner	\$436	\$0	\$0	\$0
Business Loan from Employee(s)	\$22	\$0	\$0	\$0
Other Personal Loan	\$1,033	\$15,862	\$878	\$0
Other Personal Funding	\$4,567	\$12,452	\$860	\$0
Other Personal Owner Loan	\$14,139	\$6,176	\$4,668	\$0
Outsider Debt	\$164,891	\$628,398	\$75,156	\$96,030
Personal Bank Loan	\$21,629	\$286,853	\$23,295	\$8,046
Business Credit Card	\$2,645	\$3,736	\$3,405	\$546
Other Bank Loan	\$10,416	\$128	\$6,513	\$2,080
Business Credit Card-other owners	\$209	\$65	\$1,068	\$26
Business Credit Cards	\$1,038	\$5,654	\$3,122	\$632
Bank Business Loan	\$67,728	\$299,169	\$28,882	\$56,094
Credit Line	\$25,590	\$1,216	\$5,855	\$1,918
Other Non-Bank Loan	\$17,359	\$19,005	\$2,752	\$0
Government Business Loan	\$352	\$402	\$0	\$22,219
Other Business Loan	\$32	\$0	\$192	\$0
Other Individual Loan	\$3,402	\$12,170	\$73	\$420
Other Business Debt	\$14,491	\$0	\$0	\$4,049
Total Financial Capital	\$659,184	\$2,294,093	\$722,690	\$328,316

Table 15: Sources of Financing for 2004 Startups

Funding Source	Model 1		Model 2	
	residual quintiles:		residual quintiles:	
	Top	Bottom	Top	Bottom
Owner Equity	\$51,335	\$22,112	\$39,225	\$29,187
Owner Debt	\$7,481	\$3,352	\$6,386	\$4,376
Personal Credit Card -Owner	\$2,854	\$2,356	\$2,836	\$3,031
Personal Credit Card-Other Owners	\$281	\$435	\$188	\$620
Other Personal Owner Loan	\$4,345	\$562	\$3,362	\$725
Insider Equity	\$4,539	\$1,589	\$3,884	\$1,907
Spouse Equity	\$799	\$713	\$789	\$919
Parent Equity	\$3,740	\$877	\$3,094	\$988
Insider Debt	\$10,852	\$6,354	\$10,991	\$7,790
Personal Family Loan	\$3,621	\$2,823	\$3,890	\$3,036
Personal Family Loan-other owners	\$256	\$53	\$480	\$135
Business Loan from family	\$4,671	\$2,215	\$4,433	\$2,873
Business Loan from Owner	\$0	\$5	\$0	\$5
Business Loan from Employee(s)	\$238	\$11	\$231	\$11
Other Personal Loan	\$1,233	\$721	\$1,177	\$1,032
Other Personal Funding	\$834	\$526	\$779	\$697
Outsider Equity	\$45,089	\$7,844	\$23,797	\$11,139
Other Informal Investors	\$21,798	\$1,223	\$9,058	\$1,549
Other Business Equity	\$7,591	\$2,115	\$791	\$3,818
Government Equity	\$1,312	\$438	\$1,217	\$647
Venture Capital Equity	\$14,324	\$2,697	\$12,671	\$3,584
Other Equity	\$65	\$1,371	\$60	\$1,541
Outsider Debt	\$89,329	\$25,122	\$73,079	\$40,345
Personal Bank Loan	\$26,911	\$8,864	\$23,794	\$10,107
Business Credit Card	\$1,203	\$675	\$1,291	\$971
Other Bank Loan	\$2,841	\$2,332	\$1,531	\$3,237
Business Credit Card-other owners	\$123	\$188	\$109	\$269
Business Credit Cards	\$1,113	\$743	\$985	\$1,014
Bank Business Loan	\$30,179	\$8,954	\$22,730	\$17,106
Credit Line	\$17,087	\$1,453	\$13,787	\$2,625
Other Non-Bank Loan	\$5,573	\$1,142	\$5,168	\$2,029
Government Business Loan	\$1,170	\$260	\$1,100	\$2,359
Other Business Loan	\$423	\$8	\$315	\$17
Other Individual Loan	\$604	\$60	\$564	\$101
Other Business Debt	\$2,102	\$443	\$1,706	\$511
Total Financial Capital	\$208,625	\$66,374	\$157,361	\$94,745
	44			
N	790	820	810	811

Robust standard errors in parentheses. 2-digit industry dummies and owner education dummies included. *** p<0.01, ** p<0.05, * p<0.1.

B Alternative Classification Schemes for Inside/Outside Capital

The following tables change the classification scheme from formal vs. informal to personal vs. business to illustrate the importance of personal access to formal bank channels.

Table 16: Reclassifying Personal and Business Debt: Overall Levels

Equity Source	Average	Debt Source	Average
Total Personal Equity	\$31,734	Total Personal Debt	\$21,906
		Personal bank loan	\$15,859
		Owner bus. CC balance	\$1,009
		Personal CC balance, resp.	\$2,811
		Personal CC balance, others	\$238
		Personal loan, other owners	\$1,989
Total Insider Equity	\$8,452	Total Insider Debt	\$8,221
Spouse equity	\$646	Family loan	\$2,749
Parents equity	\$1,456	Family loan to other owners	\$284
Other informal investors	\$6,350	Personal loan to other owners	\$550
		Other personal loans	\$924
		Business loan by family	\$1,760
		Business loan by owner	\$15
		Business loan by emp.	\$79
		Personal bank loan by other owners	\$1,859
Total Outsider Equity	\$9,585	Total Outsider Debt	\$29,120
Business equity	\$3,645	Bus. CC balance	\$812
Govt. equity	\$798	Other Bus. CC balance	\$135
VC equity	\$4,804	Bus. bank loan	\$17,075
other equity	\$337	Credit line balance	\$5,057
		Non-bank bus. loan	\$3,627
		Govt. bus. loan	\$1,331
		Other bus. loan	\$231
		Other individual loan	\$226
		Other debt	\$626
Total Equity	\$49,771	Total Debt	\$59,247

Table 17: Reclassifying Personal and Business Debt: Credit Scores

Funding Source	Model 1		Model 2	
	residual quintiles:		residual quintiles:	
	Top	Bottom	Top	Bottom
Owner Equity	\$51,335	\$22,112	\$39,225	\$29,187
Owner Debt	\$37,062	\$13,524	\$32,699	\$16,312
Personal Credit Card -Owner	\$2,854	\$2,356	\$2,836	\$3,031
Personal Credit Card-Other Owners	\$281	\$435	\$188	\$620
Other Personal Owner Loan	\$4,345	\$562	\$3,362	\$725
Other Personal Loan	\$1,233	\$721	\$1,177	\$1,032
Other Personal Funding	\$834	\$526	\$779	\$697
Personal Bank Loan	\$26,911	\$8,864	\$23,794	\$10,107
Other Individual Loan	\$604	\$60	\$564	\$101
Insider Equity	\$26,336	\$2,813	\$12,942	\$3,456
Spouse Equity	\$799	\$713	\$789	\$919
Parent Equity	\$3,740	\$877	\$3,094	\$988
Other Informal Investors	\$21,798	\$1,223	\$9,058	\$1,549
Insider Debt	\$8,908	\$5,295	\$9,143	\$6,330
Personal Family Loan	\$3,621	\$2,823	\$3,890	\$3,036
Personal Family Loan-other owners	\$256	\$53	\$480	\$135
Business Loan from family	\$4,671	\$2,215	\$4,433	\$2,873
Business Loan from Owner	\$0	\$5	\$0	\$5
Business Loan from Employee(s)	\$238	\$11	\$231	\$11
Business Credit Card-other owners	\$123	\$188	\$109	\$269
Business Equity	\$23,292	\$6,621	\$14,739	\$9,591
Other Business Equity	\$7,591	\$2,115	\$791	\$3,818
Government Equity	\$1,312	\$438	\$1,217	\$647
Venture Capital Equity	\$14,324	\$2,697	\$12,671	\$3,584
Other Equity	\$65	\$1,371	\$60	\$1,541
Business Debt	\$61,692	\$16,010	\$48,613	\$29,869
Business Credit Card	\$1,203	\$675	\$1,291	\$971
Other Bank Loan	\$2,841	\$2,332	\$1,531	\$3,237
Business Credit Cards	\$1,113	\$743	\$985	\$1,014
Bank Business Loan	\$30,179	\$8,954	\$22,730	\$17,106
Credit Line	\$17,087	\$1,453	\$13,787	\$2,625
Other Non-Bank Loan	\$5,573	\$1,142	\$5,168	\$2,029
Government Business Loan	\$1,170	\$260	\$1,100	\$2,359
Other Business Loan	\$423	\$8	\$315	\$17
Other Business Debt	\$2,102	\$443	\$1,706	\$511
Total Financial Capital	\$208,625	\$66,374	\$157,361	\$94,745