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Small Business Financing: Differences Between Young and Old Firms

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Financial capital is necessary not only for business formation but also for business survival and expansion: its role is well documented in the literature. While venture capital and IPOs often make the popular press, the fact is most firms are unable to tap into this market. Instead, they depend on owner equity, other private equity, and debt financing. Survey data from the Federal Reserve Board allow an in depth look at the patterns of small business financing in the late nineties. Evidence suggests that debt financing for small businesses was extremely important, especially for young firms.

I. Introduction

Through most of the nineties, the U.S. economy outperformed those in Europe and Japan. The dynamic entrepreneurial sector is one reason given for why the U.S. economy has fared so well relative to others. In the United States, the high rate of business formation is complemented by extremely strong performances of these new firms (Acs, 1999). Small business and entrepreneurship have been touted as the propulsion mechanisms for economic growth (Berger and Udell, 1998), innovation (Lerner, 1999), and job creation (Haltiwanger and Krizan, 1999). As such, there has been increased interest by policy makers, regulators, and academics in the nature and behavior of the financial markets that fund small businesses (Berger and Udell 1998).

While the general press has focused on the use of venture capital and initial public offerings (IPOs) in raising capital for business ventures, only a tiny fraction of firms have access to these types of funds. Most firms rely on owner equity and various sources of debt financing, especially small businesses. Small businesses (defined as having less than 500 employees) account for more than 98 percent of all firms.

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This paper is mainly descriptive and strives to give the reader a general overview of small business financing, especially for young firms. The first section illustrates the shares of financial capital in debt and equity for small businesses in 1998, as well as providing detailed information on the sources for debt financing. A comparison of firm characteristics, owner characteristics, financing patterns, and borrowing experiences between firms in different age categories follows. Multivariate analysis is then used to evaluate the influence of firm age on the financing patterns and borrowing experiences of small businesses.

II. Data

This research uses the most recent data available from the Survey of Small Business Finances (SSBF), a survey conducted every five years by the Federal Reserve Board. The 1998 SSBF collected data for fiscal year 1998 for a nationally representative sample of more than 3,500 for-profit, non-governmental, non-agricultural businesses with fewer than 500 employees. A wealth of information is available from these data, including many firm and owner characteristics, firm and owner credit histories, the firm's recent borrowing experiences, and the frequency and sources of financial products and services used. For more information on this survey, see Bitler, Robb, and Wolken (2001).

III. Background

It is well documented that financial capital (debt and equity financing) is necessary for business formation, expansion, and survival. For example, Evans and Jovanovic (1989) found that liquidity constraints prevented many individuals from entering into business ownership and caused others to open and operate businesses with sub-optimal levels of capital.¹ Many other researchers have documented the importance of financial capital in business survival and success (Bates, 1997; Cooper, Gimeno-Gascon, and Woo, 1994; Bruderl, Preisendorfer, and Zeigler, 1992).

The general press has of late emphasized the role of venture capital and initial public offerings (IPOs) in raising capital for business ventures, especially for high-tech firms. Yet, few businesses, especially young firms, access these sources of capital (Fluck, Holtz-Eakin, Rosen, 1998; Zider, 1998, Covitz and Liang, forthcoming). A study of firms in the *Inc.* "500" list found that more than 80 percent of these businesses were financed through the founders' personal savings, credit cards, and second mortgages, and only one-fifth had raised capital through equity offerings during the first five years of operations (Bhide, 1992).^{2,3}

The capital structure decision between equity and debt for small businesses differs from large firms for many reasons. Sources of external equity, such as angel financing or venture capital, are typically not options for most small businesses. In addition, small

¹ Another interesting perspective in examining the role of capital constraints on business startups is provided by Holtz-Eakin, Joulfaian, and Rosen (1993) who looked at individuals that received inheritances. They found that a \$100,000 inheritance increases the probability of becoming self-employed by 3.3 percentage points. They also found that receiving an inheritance increases the intensity with which capital is used in a business conditional on starting.

² The 1989 *Inc.* "500" list is a compilation of the fastest growing privately held companies in the United States that had sales of at least \$100,000 in 1983 (Bhide 1992).

³ The firms stated that they had relied on retained earnings and debt to grow over that period.

businesses may face more difficulties obtaining intermediated external debt because of their high degree of information opacity (Berger and Udell 1998). Financing is often dominated by initial insider finance (owners, friends, family) and trade credit. As a firm grows and builds a reputation based on its performance record, additional options for funding may become available.

A. Debt versus Equity: Summary results for 1998

A summary of small business debt and equity financing for 1998 is provided in Table 1A. In addition to all small businesses, firms were broken out into five age categories: “infant” (1-2 years), “adolescent” (3-4 years), “all young” (1-4 years), “middle-aged” (5-24 years), and “old” (25 or more years).⁴ Sources of equity are broken out into equity held by the principal owner and “other” equity, where “other” could indicate owners other than the principal owner, including friends, family, other members of the start-up team, external investors, or other owners⁵. About 46 percent of small business financial capital was held in equity in 1998, with a greater share being held by the principal owner in all age categories but adolescents.

The overall share of financial capital held in equity by the principal owner ranged from 13 percent for adolescent firms to more than 35 percent for firms 25 years and older. Other owners, friends, family, or outside investors held the remaining equity, ranging from 11 percent to 27 percent of all financial capital for small businesses. While this equity can be thought of as the absolute upper bound of funds provided by external investors, responses to other survey questions imply much of this other equity is held internally.⁶

Despite the facts mentioned above, the popular press continues to focus on outside equity and on high-tech firms. One reason for the inordinate amount of attention paid to young high-tech firms was that the expectations for growth were high, with the hope that a new Internet start-up would be the next Intel or Microsoft. Indeed, much of the increase in venture capital investments in the last few years has been concentrated in the computer and Internet sectors (Covitz and Liang, forthcoming). The 1998 SSBF data indicate that high tech firms were more likely to have outside equity (35 percent) compared with other firms (22 percent). However, few firms are considered to be high-tech: they made up just three percent of all small businesses and about five percent of the small businesses that had any outside equity.⁷

Only six percent of the 1998 SSBF firms had new equity injections from inside sources in 1998 and less than one percent of firms received injections from outside sources.⁸ Of firms that received outside injections, about one-third received funds of informal investors not related to management and about one-fifth received funds from venture capital firms. None of the firms received new outside equity injections through

⁴ These terms are borrowed from Berger and Udell 1998.

⁵ About 70 percent of firms had only one owner. The average number of owners was 2.56.

⁶ Answers to questions on new equity injections indicated that when firms did secure additional equity, most of the new equity injections came from sources internal to the firm.

⁷ The small business data used in this paper indicate about three percent of firms would be considered high tech, as defined by SIC codes 357,366,367,283,737,738,8071, 8731, and 8733.

⁸ Inside equity was defined as equity injections from existing owners, new or existing partners, or existing shareholders. Retained earnings did not count as new equity. By definition, only S and C corporations are allowed to have outside equity injections.

public offerings. Less than one percent of the firms in the SSBF were publicly traded in 1998.⁹

While the financial pecking order implies debt financing is optimal only after insider finance has been exhausted (Myer, 1984; Harris and Raviv, 1991; Berger and Udell, 1998), more than half of the financial capital of small businesses was held in debt in 1998. This was especially true for young firms, which held nearly 70 percent of their financial capital in debt.

In 1998, debt provided around 60 percent of financing for infant (<2 years) and middle-aged (5-24 years) firms and nearly three quarters of the financing for adolescent (3-4 years) firms. Older firms (25 years) held the smallest share of their financial capital in debt at just 38 percent.

Table 1B categorizes debt by source: financial institutions (commercial banks, finance companies, other financial institutions), nonfinancial institutions (trade credit, other businesses, government), and individuals (principal owner, credit cards, other individuals). On average, commercial banks held 39 percent of the total debt of all small businesses in 1998. Commercial banks held increasingly larger shares of debt in the older firm categories. As shown in the first column, commercial banks held only 26 percent of total debt of the youngest firms, compared with 35 percent of adolescent firms, 38 percent of middle-aged firms, and about 46 percent of the oldest firms.

Trade credit is an alternative form of credit that differs from the more traditional forms of financing. It is typically used to purchase goods or services from a particular supplier and is often used more for transaction purposes than financing purposes (Bitler, Robb, Wolken, 2001). It was second in importance on the debt side overall and the most important debt source for infant firms. This is somewhat expected, especially for the youngest firms, which tend to be the most informationally opaque and hence, face the most difficulty in obtaining intermediated external finance (Berger and Udell, 1998). Overall, trade credit accounted for about one third of the debt held.

Other sources for debt, such as government, family, friends, and other businesses, held relatively small amounts of all small business debt. Although credit card debt has received a great deal of attention in the press, it appears to be a very minor part of the total debt held by small businesses, even for very young firms.

B. Descriptive Statistics and Means Tests

Many factors influence both a firm's demand for credit and its ability to obtain credit. Firm age is one of these factors. On the demand side, new firms and young firms in the expansion stage are likely to have higher credit demands than older, well-established businesses. However, on the supply side, young firms may find it more difficult to secure credit from banks and other institutional creditors because of their limited performance histories. Two reasons why young firms are more disadvantaged in obtaining financial capital compared with older firms are: 1) the informational opacity of small businesses is especially pronounced for young firms and 2) retained earnings are not typically a financing option for young firms.

This section compares the means of various firm, owner, credit history, and financing pattern characteristics of small businesses by firm age (young firms (less than 5

⁹ Publicly traded was defined as the corporation's stock being traded on exchanges such as NASDAQ, the New York Stock Exchange, and the American Stock Exchange.

years), middle-aged firms (5-24), and old firms (25 years and older)). As shown in Table 2, younger firms were significantly smaller than their older counterparts using various size measures (employment, assets, sales). Often, very small businesses are “lifestyle” businesses with no desires for rapid growth. Thus, size is likely to be positively related to the need for credit and can be a crude proxy for credit demand. However, size can also affect the supply of credit. Unlike larger firms, small firms are more informationally opaque; few of the smallest firms have audited financial statements (Berger and Udell, 1998).

The majority of firms (of all ages) were in the service industry. However, younger firms were significantly less likely than older firms to be involved in mining or construction and more likely to be in retail trade. Firms in different industries have different requirements for credit, including trade credit. For example, firms in service industries have lower demands for trade credit than do firms in manufacturing and wholesale, where typically inventories of goods, services, and supplies are higher.

Young firms were less likely than older firms to be organized as C corporations.¹⁰ Organizational form could affect the assignment of liability and thus could affect the optimal levels of debt vis-à-vis equity.¹¹ Organizational form also affects the ability of creditors to collect on delinquent loans, and hence the supply of credit to firms. While sole proprietors and partners are generally fully liable for business obligations, corporations are separate legal entities, and the owners’ liability is limited to the amount of their original equity investment.

The success of a business in significant degree depends on the owner’s ability to obtain the necessary financial capital, which may be obtained from banks, venture capitalists, or other sources (Adrich and Zimmer, 1985). One factor that influences this ability is the perceived human capital of the firm. Because human capital is difficult to measure, owner education, experience, and age are all often used as proxies. These data indicate that the levels of owner education did not differ significantly among young and middle-aged firms but that, not surprisingly, younger firms were more likely to have younger and less experienced owners. Human capital should be positively related to creditworthiness and the supply of credit.

A firm’s credit history influences potential lenders in their credit making decisions. The credit history and recent borrowing experience of firms are reflected in the means of Table 3. These data suggest that younger firms were considered to be riskier than older firms, as indicated by a significantly lower Dun & Bradstreet credit score; they were also more likely to have been denied trade credit. A larger proportion of the middle-age firms compared with younger firms were delinquent on business and personal obligations in the three years prior to the survey.¹² Finally, a smaller

¹⁰ The owners of sole proprietorships and partnerships receive all of the income from the business and, in general, are fully liable for its obligations. Corporations are separate legal entities and the owners’ liability is limited to the amount of their original equity investment. The primary difference between the two types of corporations is how they are taxed. S corporations are not subject to corporate income tax, whereas C corporations are. In addition, S corporations are legally constrained to have less than seventy-five shareholders, are restricted to one class of stock, and must pass all firm income to the owners at the end of each fiscal year.

¹¹ There is a vast literature on the optimal capital structure that this paper does not address. See Modigliani and Miller (1958), Harris and Raviv (1991), and Berger and Udell (1998) for more on this topic.

¹² However, this could be because the young firms haven’t been around long enough to generate 3+

proportion of the young firms had owners that owned their homes, which could factor into the credit decision of lending institutions. Since owner and firm finances are often commingled for young firms, the credit history of the owner may be just as important as the credit history of the firm.

From the supply side, all of the credit history variables except home ownership should be negatively related to credit use *ceteris paribus*. Anticipating the effect from the demand side is more complicated. On the one hand, knowledge of one's credit history may reduce expectations of being able to obtain credit and could reduce a firm's demand. Having a poor credit history may also increase the fear that one's loan application will be denied. On the other hand, in order to be delinquent on a business or personal obligation, it is necessary that some credit had been extended in the first place. Thus, in this reduced form context, some of these variables might be positively associated with credit demand and the analysis variables.

Longer relationships with a commercial bank or other financial institution may indicate that a firm has a "formal" relationship in financial markets, which some argue is important to gaining access to credit markets (Rajan and Petersen, 1994; Berger and Udell, 1995). Younger firms typically have shorter relationships with their financial institutions simply because they have only been in business a brief time. However, these data suggest young firms were not shy in trying to gain access. As shown in Table 3, the younger firms were equally likely to apply for a loan or to have multiple loan applications. However, they were significantly less likely to have their loan application approved (which is expected given their higher risk). Conditional on approval, younger firms paid about the same interest rate on approved loans and paid slightly less in points to close (which could be a function of differences in loan sizes). Finally, young firms were more likely to not apply for a loan at some point when they needed credit because they feared that their loan application would be denied.¹³ However, this does not mean that these firms never applied for a loan over the period. In fact, about 34 percent who said they had this fear applied at least once, compared with 20 percent of those who did not have this fear.

Slightly more than half of small businesses had any outstanding loans in 1998, while more than two-thirds used trade credit. The means of variables related to the financial services and institutions used by businesses are presented in Table 4. In general, middle-aged firms were the most likely to have outstanding loans (57 percent) and to borrow on trade credit (30 percent). However, younger firms were the most likely to borrow on credit cards. While middle-aged firms were more likely than younger firms to use businesses credit cards, both groups were equally likely to use personal credit cards for business purposes. Young firms were just as likely to have a commercial bank as their primary institution as firms that were middle-aged.

Borrowing using trade credit and borrowing using credit cards could be substitutes for the more traditional forms of credit. Some have argued that borrowing using trade credit or credit cards is actually an indicator of credit constraints, since it is presumed that trade credit and credit cards are more expensive sources of credit.

delinquencies over the three-year period.

¹³ The question asked, "During the last three years, were there times when the firm needed credit, but did not apply because it thought the application would be turned down?"

However, because we examine these factors in a reduced-form setting, it is possible that these are also proxies for credit demand (i.e. firms that used loans also used credit cards and trade credit for borrowing).

IV. Multivariate Analysis

The univariate comparisons indicated that there were many differences in the firm and owner characteristics of young and old firms, as well as differences in their use of credit and lending experiences. Multivariate analysis is now used to estimate whether these differences in financing patterns and lending experiences between young and old firms remain after controlling for differences in firm, owner, and credit history characteristics. The five dependent variables examined are whether a firm: 1) had outstanding loans; 2) borrowed using trade credit; 3) borrowed using credit cards; 4) had loan applications that were always approved; and 5) did not apply for a loan at some point when they needed credit for fear the application would be denied. A reduced-form multivariate logistic equation of the following form is estimated for each of the dependent variables:

$$Y = \alpha + \beta(\mathbf{firm\ age}) + \delta(\mathbf{other\ firm\ characteristics}) + \gamma(\mathbf{owner\ characteristics}) + \eta(\mathbf{credit\ history}) + \phi(\mathbf{financing\ characteristics}) + \varepsilon^{14} \quad (1)$$

Firm age is designated with three dummy variables: young (1-4 years), middle-aged (5-24 years), and old (25 years and older). The oldest category was the excluded category in the regressions. Thus, if differences in credit use patterns can be explained by firm and owner characteristics (other than firm age), then the coefficients on young and middle-age should not be significantly different from zero.¹⁵

A. Independent variables:

Firm Characteristics

<i>Size</i>	<i>Log of employment, Log of sales, Log of assets, and Log of number of offices</i>
<i>Industry</i>	<i>Manufacturing; Mining and construction; Wholesale; Retail; Finance, insurance, and real estate (FIRE); and Services and other</i>
<i>Organizational form</i>	<i>Sole proprietorship, Partnership, C corporation, and S corporation</i>
<i>Location</i>	<i>MSA and non-MSA (metropolitan statistical area)</i>
<i>Firm Age</i>	<i>Young (1-4 years), Middle-aged (5-24 years), and Old (25+ years)</i>

Owner characteristics

<i>Education</i>	<i>College Degree +, less than college degree</i>
<i>Age</i>	<i>Very young (less than 35 years old), young (35-45 years), middle (46-55 years), and older (56+ years)</i>
<i>Experience</i>	<i>Low (less than five years), medium (5-9 years), high (10-19 years), and very high (20+ years)</i>

¹⁴ The data for this study are obtained from a survey that used a stratified sampling design. Additionally, the weights have been adjusted to account for both the sample design and unequal response rates across strata.

¹⁵ Note: age might be correlated with many other variables. In a future study, I will estimate separate equations for both old and young firms to see how factors influencing financing may differ by firm age.

Credit history

<i>Dun & Bradstreet Credit Score</i>	<i>1-100%, higher number indicating greater creditworthiness</i>
<i>Bankruptcy</i>	<i>1 if personal or business bankruptcy in the last seven years, else 0</i>
<i>Delinquency on personal obligations</i>	<i>1 if three or more delinquencies of 60 days or more on personal obligations, else 0</i>
<i>Delinquency on business obligations</i>	<i>1 if three or more delinquencies of 60 days or more on business obligations, else 0</i>
<i>Judgements</i>	<i>1 if any judgements against business or owner, else 0</i>
<i>Denied trade credit</i>	<i>1 if business had ever been denied trade credit, else 0</i>
<i>Home ownership</i>	<i>1 if principal owner owns home, else 0</i>

Financing characteristics

<i>Checking</i>	<i>1 if firm has a checking account, else 0</i>
<i>Savings</i>	<i>1 if firm has a savings account, else 0</i>
<i>Owner loan</i>	<i>1 if firm has an owner loan, else 0</i>
<i>Trade Credit Borrowing</i>	<i>1 if firm borrows using trade credit, else 0</i>
<i>Credit Card Borrowing</i>	<i>1 if firm borrows using credit card, else 0</i>

B. Multivariate results:

Outstanding loans: The first model investigates the factors that influence whether a firm has any outstanding loans. This includes credit lines, capital leases, mortgages, and motor vehicle, equipment, or “other” loans. The results for all of the models are shown in Table 5. The excluded firm age category for all of models was old firms (25+ years). Both young firms and middle-aged firms were significantly more likely than older firms to hold some type of outstanding loan.

The size variables – employment, sales, and assets – were all positive and statistically significant, indicating larger firms were more likely to have outstanding loans, as expected. Firms organized as C-corporations were less likely to have outstanding loans, as well as businesses that were headquartered in a metropolitan statistical area (MSA). Of the industry variables, the coefficient on mining and construction was positive and statistically significant, indicating that firms in these industries were more likely than firms in manufacturing to have outstanding loans. Being delinquent on business obligations in the past three years positively influenced whether a firm had any outstanding loans. This should be expected since it is impossible to be delinquent on loan obligations without having a loan in the first place. Among owner characteristics, only owner age was statistically significant. Owners that were between the ages of 35 and 55 were more likely than older owners to have outstanding loans.

Trade credit borrowing: In this model, the dependent variable is the indicator of whether the firm repaid trade credit after the due date (borrowed). Firm age did not appear to influence the use of trade credit borrowing after controlling for other factors. Firm size was important and larger firms as measured by sales and assets were more

likely to borrow through the use of trade credit, as were corporations (both S corporations and C corporations). Compared with firms in manufacturing, those in transportation, communications, and public utilities (TCPU), retail, and services were less likely to have trade credit borrowing. The Dun and Bradstreet credit score was negative indicating that the more creditworthy a firm, the less likely it was to borrow using trade credit. This finding is consistent with the view that riskier firms use trade credit as a source of financing, since it is believed that trade credit is a more expensive source of credit. The coefficient on bankruptcy was both negative and statistically significant, suggesting bankruptcy may negatively affect a firm's ability to obtain trade credit. The coefficients on delinquencies on personal and business obligations were positive, which is not too surprising given that the dependent variable is defined as paying trade credit obligations after their due date (i.e., being delinquent). Firms with owner loans were also more likely to borrow through trade credit.

Credit card borrowing: The next model deals with whether a firm carried balances on their business or personal credit cards. The coefficient on young firms was positive but not statistically significant, indicating that younger firms were not significantly more likely than older firms to borrow using credit cards after controlling for other factors. Those firms that were organized as C or S corporations were less likely to carry balances, as were firms in the mining, construction, finance, insurance, and real estate industries (as compared with manufacturing firms). The coefficient on the Dun & Bradstreet credit score was negative and statistically significant, indicating that the less risky firms were less likely to borrow using credit cards. Firms that were delinquent on personal and/or business obligations or denied trade credit were more likely to carry balances. Similarly, firms with owner loans were more likely to borrow on credit cards.

Loan application(s) always approved: After controlling for firm and owner characteristics, as well as credit history variables, young firms were just as likely to have their loan application approved. Loan approval does not seem to be affected by any size variables (employment, sales, or assets) except number of offices, which is negative and statistically significant. The legal form of business was important with corporations more likely to have their loan applications approved. Among the industry variables, those firms involved in retail and wholesale were more likely than those in manufacturing to have their loan applications approved. If a firm's credit history involved bankruptcy, judgments against owners, or trade credit denial, then the firm was less likely to have their loan application(s) always approved. Business owners who owned their homes were more likely to be approved. Firms with owner loans or balances carried on credit cards or trade credit were less likely to have their loans always approved.

Did not apply for fear of being denied: Some businesses did not apply for loans at points when they needed credit because they feared that their application would be turned down. After controlling for many firm and owner characteristics, including the credit history of both the firm and owner, young firms were still significantly more likely than older firms to have this fear. Larger firms, as measured by sales, were less likely to have this fear. Firms in transportation, communications, and public utilities were more likely than firms in manufacturing to not apply for fear of denial. Firms that had higher Dun & Bradstreet credit scores (lower risk) were less likely not to apply for fear of denial, as were owners that were homeowners. Owners that had declared bankruptcy, been delinquent on personal obligations, had a judgment against them, or had been

denied trade credit were more fearful of loan application denial. Firms with owner loans, credit card borrowing, or trade credit borrowing were also more likely to have these fears. Owners between the ages of 35 and 55 feared application denial more than older owners, while owners with at least a college degree were less likely to fear denial than those with less education.

V. Conclusion

While young firms use relatively more debt than older firms, they may face greater difficulty in securing commercial bank debt than more established firms. There is evidence that this is the case in that the proportion of debt financing obtained from commercial banks is smaller for young firms than for older firms. However, this may just reflect the higher risk associated with young firms because of their informational opaqueness. Young firms showed greater reliance on debt from non-bank institutions.

Multivariate analysis suggests that, after controlling for firm, owner, and credit history characteristics, young firms were more likely than older firms to have outstanding loans. Yet, young firms were also more likely to have not applied for a loan at some point when they needed credit because they feared their loan application would be denied. Thus, for young firms, it appears that credit demand may outstrip credit supply, even for creditworthy firms.

REFERENCES

- Acs, Zoltan J., "The New American Revolution." In Are Small Firms Important? Their Role and Impact, edited by Zoltan J. Acs, Kluwer Academic Publishers, Boston, 1999, pp. 1-20.
- Ang, James S., James Wuh Lin, and Floyd Tyler, "Evidence on the Lack of Separation Between Business and Personal Risks Among Small Businesses." *Journal of Small Business Finance* 4 (1995), pp. 197-210.
- Aldrich, H., "Networking Among Women Entrepreneurs," in O. Hagan, C. Rivchun & D. Sexton (Eds.), *Women Owned Businesses*. New York: Praeger, 1989.
- Bates, Timothy. Race, Self-Employment & Upward Mobility. Washington, D.C.: The Woodrow Wilson Center Press, 1997.
- Berger, Allen N., and Gregory E. Udell, "The economics of small business finance: The roles of private equity and debt markets in the financial growth cycle." *Journal of Banking & Finance* 22 (1998), pp. 613-673.
- Berger, Allen N., and Gregory E. Udell, "Relationship Lending and Lines of Credit in Small Firm Finance." *Journal of Business* 68(3) (1995), pp. 351-381.
- Berger, Allen N., Anthony Sanders, Joseph M. Scalise, and Gregory F. Udell, "The Effects of Bank Mergers and Acquisitions on Small Business Lending." *Journal of Financial Economics*, 1998.
- Bhide, Amar, "Bootstrap Finance: The Art of Start-ups." *Harvard Business Review* (November-December 1992), pp. 109-117.
- Bitler, Marianne P., Robb, Alicia M. and John D. Wolken. "Financial Services used by Small Businesses: Evidence from the 1998 Survey of Small Business Finances." *Federal Reserve Bulletin*, April 2001, pp. 183-205.
- Blackwell, David W., and Drew B. Winters, "Banking Relationships and the Effect of Monitoring on Loan Pricing." *Journal of Financial Research* XX (2) (Summer 1997), pp. 275-289.
- Blanchflower, D., P. Levine, and D. Zimmerman. 1998. "Discrimination in the Small Business Credit Market," Working paper, NBER.
- Boden, R. and Alfred R. Nucci, "On the Survival Prospects of Men's and Women's New Business Ventures." *Journal of Business Venturing* (forthcoming).
- Brewer, E., Genay, H., 1994. "Funding small businesses through the SBIC program." Federal Reserve Bank of Chicago, *Economic Perspectives* 18, 22-34.

- Bruderl, Josef, Peter Preisendorfer, and Rolf Ziegler, "Survival Chances of Newly Founded Business Organizations." *American Sociological Review* 57(2) (April 1992), pp. 227-242.
- Carsky, Mary, and Susan Coleman, "Sources of Capital for Small Family-Owned Businesses: Evidence from the National Survey of Small Business Finances," *Family Business Review* 12(1) (March 1999), pp. 73-85.
- Carter, Nancy M., Mary Williams, and Paul D. Reynolds, "Discontinuance Among New Firms in Retail: The Influence of Initial Resources, Strategy, and Gender." *Journal of Business Venturing* 12 (1997), pp. 125-145.
- Cavalluzzo, Ken, Linda Cavalluzzo, and John D. Wolken, "Competition, Small Business Financing, and Discrimination: Evidence from a New Survey." *Finance and Economics Discussion Series 1999-25*, Board of Governors of the Federal Reserve System (1999)
- Chaganti, Radha, "Management in Women Owned Enterprises." *Journal of Small Business Management* (October 1986), pp. 18-29.
- Coleman, Susan, "Sources of Small Business Capital: A Comparison of Men and Women-Owned Small Businesses." *Journal of Applied Management and Entrepreneurship* 4(2) (January 1999), pp. 138-151.
- Cole, Rebel A., and John D. Wolken, "Financial Services Used by Small Businesses: Evidence from the 1993 National Survey of Small Business Finances." *Federal Reserve Bulletin* 81 (July 1995), pp. 629-667.
- Cooper, Arnold C., Carolyn Y. Woo, and William C. Dunkelberg, "Entrepreneurship and the Initial Size of Firms." *Journal of Business Venturing* 4 (1989), pp. 317-332.
- Cooper, Arnold C., F. Javier Gimeno-Gascon, and Carolyn Y. Woo, "Initial Human and Financial Capital as Predictors of New Venture Performance." *Journal of Business Venturing* 9 (1994), pp. 371-395.
- Covitz, Daniel, and Nellie Liang, "Recent Developments in the Private Equity Market and the Role of Preferred Returns." Working Paper, Board of Governors of the Federal Reserve System.
- Ennew, Christine T., and Martin R. Binks, "The Provision of Finance to Small Businesses: Does the Banking Relationship Constrain Performance?" *Journal of Small Business Finance* 4 (1994), pp. 57-74.

- Evans, David S., and Boyan Jovanovic, "An Estimated Model of Entrepreneurial Choice under Liquidity Constraints." *Journal of Political Economy* 97(4) (1989), pp. 808-827.
- _____, and Linda S. Leighton, "Some Empirical Aspects of Entrepreneurship." *The American Economic Review* 79(3) (June 1989), pp. 519-535.
- Fenn, George W., Nellie Liang, and Stephen Prowse, "The Economics of the Private Equity Market." Staff Studies 168. Washington, D.C.: Board of Governors of the Federal Reserve System, 1995.
- Fluck, Zsuzsanna, Douglas Holtz-Eakin, and Harvey S. Rosen, "Where Does the Money Come From? The Financing of Small Entrepreneurial Enterprises." New York University Working Paper Series S-98-32.
- Haltiwanger, John, and C.J. Krizan, "Small Business and Job Creation in the United States: The Role of New and Young Businesses." In Are Small Firms Important? Their Role and Impact, edited by Zoltan J. Acs, Kluwer Academic Publishers, Boston, 1999, pp. 79-98.
- Harris, Milton, and Artur Raviv, "The Theory of Capital Structure." *The Journal of Finance* 46(1) (March 1991), pp. 297-355.
- Lerner, Joshua, "Small Businesses, Innovation, and Public Policy." In Are Small Firms Important? Their Role and Impact, edited by Zoltan J. Acs, Kluwer Academic Publishers, Boston, 1999, pp. 159-168.
- Myers, Stewart C., "The Capital Structure Puzzle." *The Journal of Finance* 39(3) (July 1984), pp. 575-592.
- Peek, Joseph and Eric S. Rosendgren, "Small Business Credit Availability: How Important is Size of Lender?" In Universal Banking: Financial System Design Reconsidered, edited by A. Saunders and I. Walter, Irwin Publishing, Chicago, Illinois, 1996, pp. 628-655.
- Petersen, Mitchell A., and Raghuram G. Rajan, "The Benefits of Lending Relationships: Evidence from Small Business Data." *Journal of Finance* 49 (March 1994), pp. 3-37.
- Scherr, Frederick C., Timothy F. Sugrue, and Janice B. Ward, "Financing the Small Firm Start-Up: Determinants of Debt Use." *Journal of Small Business Finance* 3(1) (1993).

U.S. Bureau of the Census. 1997. 1992 Characteristics of Business Owners. Washington, D.C.: Government Printing Office.

Zider, Bob, "How Venture Capital Works." *Harvard Business Review* 76(6) (November/December 1998), pp. 131-139.

Table I: Debt and Equity Financing of Small Businesses, 1998
 Percent of total equity plus debt (top numbers), billions of dollars (bottom numbers)

Firm Age	Equity			Debt			Total Equity plus Debt
	Principal Owner	Other Equity	Total Equity	Credit Lines Loans, and Capital Leases	Other Debt	Total Debt	
All Firms	27.50	18.21	45.71	31.40	22.89	54.29	100.00
	471.61	312.31	783.92	538.50	392.46	930.97	1714.89
Infant (1-2)	29.04	11.45	40.50	34.50	25.00	59.50	100.00
	20.80	8.20	29.01	24.71	17.91	42.62	71.63
Adolescent (3-4)	13.06	14.67	27.73	43.89	28.38	72.27	100.00
	23.90	26.83	50.73	80.30	51.92	132.22	182.95
All young (<5)	17.56	13.76	31.32	41.25	27.43	68.68	100.00
	44.70	35.04	79.74	105.01	69.83	174.84	254.58
Middle-Aged (5-24)	26.10	14.76	40.86	33.16	25.98	59.14	100.00
	250.07	141.47	391.54	317.72	248.94	566.66	958.20
Old (25+)	35.22	27.05	62.27	23.06	14.68	37.73	100.00
	176.84	135.81	312.65	115.77	73.70	189.47	502.11

a. Financial Institutions include commercial banks, finance companies, thrift institutions, leasing companies, brokerage firms, mortgage companies, and insurance companies.

b. For proprietorships, principal owner's share of equity is by definition 100%.

c. Trade credit is defined as accounts payable for year-end 1998.

d. Only partnerships and corporations have principal owner loans. By definition, proprietorships do not have loans from owners.

e. Credit card debt is estimated using the typical monthly balances of business charges to both personal and business credit cards after monthly payments were made on these accounts. Personal and business totals could not be accurately separated using the NSSBF data.

f. Represents enterprises with fewer than 500 full-time equivalent employees, excluding real estate operators and lessors, real estate subdividers and developers, real estate investment trusts, agricultural enterprises, financial institutions, not-for-profit institutions, government entities, and subsidiaries controlled by other corporations.

Sources: All data are from the 1998 Small Business Finance (SSBF). These data are weighted to replicate to the population as a whole. The SSBF data are from year-end 1998, except that the principal owner's equity, total equity, and trade credit are from balance sheets at year-end 1998, and credit card debt is from typical monthly balances during 1998.

Table II: Sources of Debt, 1998
Percent of total debt (top numbers), billions of dollars (bottom numbers)

Firm Age	Debt										Total Equity plus Debt
	Commercial Banks	Finance Companies	Other Fin. Institutions	Business Firms	Trade Credit	Gov./Oth Loans	Owner Loans	Credit Card	Family & Friends	Total Debt	
All Firms	38.76	8.11	6.30	1.22	33.35	0.69	8.69	0.12	2.75	100.00	100.00
	360.83	75.53	58.68	11.40	310.45	6.44	80.89	1.12	25.62	930.97	1714.89
Infant (1-2)	25.63	10.33	14.88	0.76	31.84	1.12	10.03	0.14	5.26	100.00	100.00
	10.92	4.40	6.34	0.33	13.57	0.48	4.28	0.06	2.24	42.62	71.63
Adolescent (3-4)	34.73	7.89	12.86	1.84	31.08	0.47	8.08	0.11	2.93	100.00	100.00
	45.92	10.44	17.01	2.43	41.10	0.62	10.68	0.14	3.87	132.22	182.95
All young (<5)	32.51	8.49	13.36	1.58	31.27	0.63	8.56	0.12	3.50	100.00	100.00
	56.84	14.84	23.35	2.76	54.67	1.10	14.96	0.20	6.11	174.84	254.58
Middle-Aged (5-24)	38.30	7.38	5.29	1.34	34.83	0.57	8.96	0.13	3.20	100.00	100.00
	217.03	41.79	29.98	7.58	197.37	3.22	50.80	0.76	18.12	566.66	958.20
Old (25+)	45.90	9.97	2.82	0.56	30.83	1.12	7.98	0.08	0.73	100.00	100.00
	86.96	18.89	5.35	1.07	58.41	2.12	15.13	0.16	1.39	189.47	502.11

a. Financial Institutions include commercial banks, finance companies, thrift institutions, leasing companies, brokerage firms, mortgage companies, and insurance companies.

b. For proprietorships, principal owner's share of equity is by definition 100%.

c. Trade credit is defined as accounts payable for year-end 1998.

d. Only partnerships and corporations have principal owner loans. By definition, proprietorships do not have loans from owners.

e. Credit card debt is estimated using the typical monthly balances of business charges to both personal and business credit cards after monthly payments were made on these accounts. Personal and business totals could not be accurately separated using the NSSBF data.

f. Represents enterprises with fewer than 500 full-time equivalent employees, excluding real estate operators and lessors, real estate subdividers and developers, real estate investment trusts, agricultural enterprises, financial institutions, not-for-profit institutions, government entities, and subsidiaries controlled by other corporations.

Sources: All data are from the 1998 Small Business Finance (SSBF). These data are weighted to replicate to the population as a whole. The SSBF data are from year-end 1998, except that the principal owner's equity, total equity, and trade credit are from balance sheets at year-end 1998, and credit card debt is from typical monthly balances during 1998.

TABLE III. Firm and Owner Characteristics -- SSBF 1998 Weighted Means
(Dollars in Thousands -- Proportions as Percentages)

Variable	All	Old (25+)	Middle-age (5-24)		Young (1-4)
SIZE					

Total Employment	8.79	14.92	8.61	**	5.57
Assets	398.88	858.79	355.98	**	238.93
Sales	1011.62	1909.45	982.35	**	546.84
Profit	126.54	332.40	96.85		84.32
Number of Sites	1.38	1.30	1.47		1.17
INDUSTRY					

Mining or Construction	12.70	18.27	12.63	*	9.48
Manufacturing	8.92	9.64	9.12		7.90
Transportation and Public Utilities	3.98	3.10	3.65		5.42
Wholesale	7.64	9.27	7.28		7.69
Retail	20.26	17.49	19.51	**	24.06
Services and Other	46.50	42.24	47.81		45.44
ORGANIZATIONAL FORM					

C-corporation	19.54	23.50	20.15	**	15.42
S-corporation	23.77	19.21	24.72		23.89
Partnership	6.77	5.94	6.27	*	8.67
Sole Proprietor	49.92	51.35	48.86		52.02
OTHER FIRM CHARACTERISTICS					

Firm Age	13.25	34.67	12.33	**	2.77
In a Metropolitan Statistical Area	79.73	69.79	81.79		79.98
OWNER CHARACTERISTICS					

College Grad	47.58	40.68	49.09		47.56
Years of Experience	18.05	33.17	17.41	**	10.61
Age	50.00	60.97	49.54	**	44.60
N	3348	553	2105		690

* Difference of means between young and middle-age firms are significantly different from zero at the 90th percentile.

** Difference of means between young and middle-age firms are significantly different from zero at the 95th percentile.

TABLE IV. Credit History and Recent Borrowing Experience -- SSBF 1998 Weighted Means (Dollars in Thousands -- Proportions as Percentages)

Variable	All	Old (25+)	Middle-age (5-24)		Young (1-4)
CREDIT HISTORY					

Dun & Bradstreet Credit Score	50.66	60.38	51.90	**	41.26
Denied Trade Credit	5.60	2.90	5.52		7.46
Bankruptcy by Firm in Last 7 Years	2.47	1.84	2.32		3.30
Delinquency on Personal Obligations	7.17	4.89	8.17	**	5.78
Delinquency on Business Obligations	8.02	6.43	9.42	**	5.07
Judgment Against Owner	3.80	4.06	3.60		4.21
Owner Owns Home	87.14	93.78	87.85	**	81.12
RECENT LENDING EXPERIENCE					

Loan Application	23.28	14.49	24.30		25.79
Multiple Loan Applications	12.22	8.90	12.16		14.41
Loan Application(s) Always Approved	70.67	82.71	71.88	*	63.38
Approved Original Interest Rate	9.39	8.97	9.37		9.61
Approved Points to Close	0.16	0.22	0.18	**	0.07
Approved Total Cost of Obtaining Loan	1.95	1.16	2.29		1.29
Didn't Apply Fearing Denial	23.79	14.00	23.39	**	30.89
N	3348	553	2105		690

* Difference of means between young and middle-age firms are significantly different from zero at the 90th percentile.

** Difference of means between young and middle-age firms are significantly different from zero at the 95th percentile.

TABLE V. Financial Services and Institutions Used by Firm -- SSBF 1998 Weighted Means (Dollars in Thousands -- Proportions as Percentages)

Variable	All	Old (25+)	Middle-aged (5-24)		Young (1-4)
USE OF FINANCIAL SERVICES					

Have Outstanding Loan	54.72	51.45	56.91	**	50.58
Capital Lease	10.64	7.69	11.84	**	9.06
Credit Line	27.76	30.85	30.07	**	19.43
Equipment Loan	9.79	9.23	9.94		9.71
Mortgage	12.38	11.89	12.88		11.31
Motor Vehicle Loan	20.76	19.75	21.60		19.01
Other Loan	9.90	6.93	10.32		10.54
Borrowed on Credit Card	16.72	12.57	16.16	**	20.80
Used Business Credit Card	33.92	32.33	35.99	**	29.08
Used Personal Credit Card for Business Purposes	46.31	42.49	47.18	**	46.20
Borrowed on Trade Credit	27.67	23.79	29.82	**	24.02
Used Trade Credit	63.62	65.82	66.03		55.55
Checking Account	93.90	92.32	94.76	*	92.45
Savings Account	21.98	25.65	23.87	**	14.47
Loan from Owner(s)	14.24	11.48	14.46		15.31
INSTITUTION USE					

Used any Institution	96.32	94.88	97.25	**	94.60
Primary Institution is a Bank	84.07	86.86	84.46		81.25
N	3348	553	2105		690

* Difference of means between young and middle-age firms are significantly different from zero at the 90th percentile.

** Difference of means between young and middle-age firms are significantly different from zero at the 95th percentile.

Table VI. Logistic Regression Results

Independent Variables	Dependent Variable				
	Have outstanding	Trade Credit	Credit Card	Loan App	Didn't Apply
	Loan	Borrowing	Borrowing	Always Approved	Fear of Denial
young (<5 years)	0.50 ** (0.20)	0.25 (0.22)	0.37 (0.26)	-0.60 (0.51)	0.56 ** (0.24)
middle age (5-24 years)	0.36 ** (0.16)	0.23 (0.17)	-0.01 (0.21)	-0.60 (0.44)	0.27 (0.21)
log of employment	0.39 ** (0.06)	-0.05 (0.07)	-0.07 (0.07)	0.04 (0.14)	-0.03 (0.07)
log of sales	0.13 ** (0.04)	0.11 ** (0.04)	-0.03 (0.03)	0.07 (0.07)	-0.05 * (0.03)
log of assets	0.22 ** (0.03)	0.11 ** (0.04)	0.01 (0.03)	0.08 (0.06)	-0.02 (0.03)
log of # of offices	0.04 (0.16)	0.21 * (0.13)	-0.18 (0.19)	-0.54 * (0.28)	0.18 (0.14)
partnership	0.12 (0.19)	-0.26 (0.25)	-0.06 (0.24)	0.06 (0.43)	0.14 (0.23)
C corporation	-0.28 * (0.15)	0.28 * (0.15)	-0.48 ** (0.20)	0.66 * (0.37)	-0.03 (0.18)
S corporation	-0.09 (0.14)	0.27 * (0.15)	-0.37 ** (0.18)	0.66 ** (0.32)	-0.03 (0.17)
mining/construction	0.63 ** (0.22)	-0.04 (0.22)	-0.69 ** (0.27)	0.42 (0.39)	-0.04 (0.25)
TCPU.	0.28 (0.29)	-1.07 ** (0.37)	-0.40 (0.39)	0.98 (0.74)	0.54 * (0.30)
wholesale	0.15 (0.24)	-0.36 (0.24)	-0.26 (0.29)	1.07 * (0.56)	-0.33 (0.27)
retail	-0.17 (0.18)	-0.37 ** (0.19)	-0.18 (0.22)	0.71 * (0.39)	0.02 (0.21)
services/other	0.09 (0.17)	-0.32 * (0.17)	-0.18 (0.20)	0.32 (0.33)	-0.15 (0.20)
MSA	-0.25 ** (0.12)	-0.06 (0.13)	-0.11 (0.15)	-0.27 (0.27)	0.12 (0.14)
D&B score	0.00 (0.00)	-0.01 ** (0.00)	-0.01 ** (0.00)	0.00 (0.00)	-0.01 ** (0.00)
bankruptcy	-0.24 (0.30)	-0.85 * (0.46)	-0.32 (0.41)	-3.75 ** (0.81)	1.96 ** (0.37)

See next page for
continuation of Table

TABLE CONTINUED

delinquent on personal oblig	0.14 (0.21)	0.66 ** (0.23)	0.70 ** (0.22)	-0.55 (0.35)	1.38 ** (0.22)
delinquent on business oblig	0.51 ** (0.20)	1.96 ** (0.20)	0.92 ** (0.20)	-0.21 (0.35)	0.21 (0.22)
judgements	0.06 (0.26)	-0.01 (0.28)	0.15 (0.30)	-1.33 ** (0.42)	0.70 ** (0.25)
denied trade credit	0.30 (0.22)	0.62 ** (0.22)	0.40 * (0.22)	-0.81 ** (0.33)	1.25 ** (0.21)
home ownership	0.03 (0.15)	-0.06 (0.17)	-0.13 (0.18)	0.96 ** (0.34)	-0.64 ** (0.16)
checking account	0.33 (0.26)	1.44 ** (0.39)	0.36 (0.27)	-0.51 (0.50)	0.31 (0.25)
savings account	0.07 (0.12)	-0.19 (0.12)	-0.14 (0.15)	0.26 (0.25)	-0.39 ** (0.15)
owner loan	0.15 (0.15)	0.45 ** (0.14)	0.64 ** (0.18)	-1.09 ** (0.30)	0.49 ** (0.16)
college degree +	-0.15 (0.10)	-0.09 (0.11)	0.05 (0.12)	-0.04 (0.23)	-0.30 ** (0.12)
low experience	-0.12 (0.22)	-0.35 (0.25)	-0.38 (0.25)	-0.37 (0.48)	-0.35 (0.24)
medium experience	-0.03 (0.16)	-0.19 (0.17)	-0.05 (0.20)	-0.61 * (0.33)	0.01 (0.19)
high experience	0.09 (0.13)	-0.08 (0.13)	0.05 (0.15)	0.05 (0.28)	-0.09 (0.15)
owner <35 years	0.26 (0.23)	-0.31 (0.28)	0.12 (0.28)	0.33 (0.45)	-0.03 (0.27)
owner 35-45 years	0.29 ** (0.14)	0.21 (0.15)	0.24 (0.18)	0.19 (0.33)	0.44 ** (0.17)
owner 46-55 years	0.19 (0.12)	0.12 (0.13)	0.23 (0.16)	0.29 (0.30)	0.29 * (0.15)
credit card borrowing				-0.50 ** (0.24)	1.29 ** (0.13)
trade credit borrowing				-0.51 ** (0.25)	0.31 ** (0.14)
constant term	-4.79 ** (0.49)	-4.42 ** (0.58)	-1.14 ** (0.47)	-0.42 (1.07)	-0.82 * (0.43)
N	3348	3348	3348	912	3348

Notes:

* and ** indicate significance at the 90 and 95 percent levels

Standard errors are in parentheses