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Small Firm Use of Debt: An Examination of the Smallest Small Firms

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INTRODUCTION

Access to capital is an on-going challenge for small firms. Capital is required to address a broad range of needs: to cover start-up costs, to provide working capital, to secure facilities or equipment, and to hire employees. Most small firms are at a relative disadvantage, because they are too small to access the public debt and equity markets. Similarly, they are typically too small to show up on the radar screens of venture capitalists on patrol for the next potential hot IPO. Alternatively, very small firms are heavily reliant on bank loans, trade credit, and informal sources of capital including loans from family and friends.

Entrepreneurial finance literature typically segments small firms into two types. "Entrepreneurial firms" are those that start out small but have the objectives of growth, profitability, and eventually, perhaps, an IPO. "Lifestyle firms", on the other hand, are firms that are small and intend to remain small. The point of this distinction is that firms of different size might be expected to have different types of objectives. Correspondingly, one might expect different attitudes toward and use of various sources of capital.

This paper will use data from the 1993 National Survey of Small Business Finances (NSSBF) to examine the financing strategies of very small firms, a largely understudied segment of the small business market. Specifically, it will examine the types of debt capital used by the smallest small firms and compare their usage to that of somewhat larger small firms. Further this article will attempt to determine the variables that predict the use of debt capital and externally acquired debt capital by small firms and larger firms. Finally, it will explore the extent to which smaller and larger firms apply for external debt capital and the extent to which they are approved for loans.

I. SMALL FIRMS' USE OF DEBT

Traditional capital structure theory contends that firms select the mix of debt and equity that maximizes the value of the firm and minimizes its weighted average cost of capital. The assumption implicit in this theory is that firms have access to the full range of debt and equity alternatives, an assumption that typically does not hold for small, privately held firms. High issuance costs make public debt and equity unrealistic options for smaller firms. Similarly, small, privately held firms are plagued with the problem of asymmetric information or incomplete flows of information between insiders and outsiders (Ang (1992), Ennew & Binks (1994), Weinberg (1994)). Because of informational asymmetries, outsiders, including lenders and investors, have a difficult

time securing and processing information about the firm. Thus, they may be less willing to extend capital to the firm.

Given their inability to access public debt and equity markets, small firms tend to be heavily reliant on debt in the form of commercial bank financing. Scherr et al. (1993) found that commercial banks were the major source of debt for small firm startups. Similarly, Petersen and Rajan (1994) and Cole and Wolken (1995, 1996) found that commercial banks were the major providers of credit and other financial services to small businesses.

A number of studies have compared the capital structures of small firms to those of larger firms to demonstrate small business' dependence on debt financing. Using the COMPUSTAT database Titman and Wessels (1988) and Dwyer and Lynn (1989) found that small firms used significantly more debt, particularly short-term debt, than large firms. They concluded that small firms rely more heavily on bank financing to avoid the relatively high transaction costs associated with publicly issued debt and equity. Their findings were confirmed in a subsequent study by Osteryoung et al. (1992) in which small privately owned firms were compared with large publicly owned firms using 13 selected financial ratios. Studies by Carter and Van Auken (1990) and Van Auken and Holman (1995) found that small firms had lower levels of cash, higher accounts receivable, and higher long-term debt. They concluded that small firms may use higher debt levels to compensate for their more limited access to equity capital.

In spite of their dependence on debt capital, and in particular bank debt, prior research suggests that many small firms experience difficulties in working with banks, have less access to bank capital, and pay a higher rate of interest for the loans they do acquire (Coleman & Carsky, 1996, Riding et al., 1994). Small firms are often relatively new and lack a track record of profitability that would attest to their ability to repay a loan. Further, many small businesses are in service industries and lack assets that could be used as collateral. Finally, small businesses are more prone to financial distress and failure (Bates & Nucci, 1989, Cochran, 1981). These factors taken in concert may make small business lending less attractive to banks. One would anticipate that these difficulties would be even more pronounced for the smallest firms which bankers may view as being overly labor intensive and insufficiently profitable. Alternatively, very small firms may not need or desire external sources of financing; the owner's personal financial resources and earnings from the firm may be sufficient.

II. SOURCES OF CAPITAL FOR VERY SMALL FIRMS

Although we know that small firms have been a major source of job growth in recent years (The State of Small Business, 1995), and we also know that the majority of small firms have fewer than 5 employees (Cole & Wolken, 1995, Giles, 1993), we know relatively little about the financing strategies of the smallest small firms. Petty and Bygrave (1993) refer to these firms as "lifestyle firms" in which the owner is primarily motivated by his or her desire to embrace a particular lifestyle rather than by the more traditional financial goals of growth and earnings. They contend that financing for lifestyle firms comes predominantly from personal resources including friends and relatives, short-term debt, and retained earnings. James Ang (1991, 1992) also asserts that small firms are heavily reliant on the owner's savings and his or her ability to obtain funds from family and friends whom he refers to as the "F-connection". In a study of

microbusinesses, Giles (1993) found that very small firms are primarily reliant on informal sources of financing including the firm owner's personal financial resources and support from family and friends. To date, however, there are very few studies on the financing behavior of the smallest of small firms. This paper seeks to remedy that deficiency.

III. DESCRIPTIVE RESULTS

Data for this study were drawn from the 1993 National Survey of Small Business Finances (NSSBF) conducted by the Federal Reserve and the U.S. Small Business Administration every five years. The 1993 NSSBF is the most recent for which data are publicly available. This study provides a national sample of over 4,000 privately owned small businesses, with "small" being defined as fewer than 500 employees. It includes balance sheet and income statement data on the included firms as well as information on their use of financial services and financial service providers.

Tables 1 and 2 provide summary statistics for variables of interest. The sample has been divided into smaller firms (sales less than \$100,000) and larger firms (sales greater than or equal to \$100,000) for comparison purposes. Firms in existence for less than 5 years were excluded from the sample to eliminate start-up and early stage firms. In this study, the objective was to examine the financing behavior of established small firms rather than firms that might be experiencing start-up related issues and difficulties. Prior research reveals that many firms fail during their early years (Bates & Nucci, 1989, Cochran, 1981). One might anticipate that these firms would exhibit very different types of financing strategies and performance than established, "going concern" firms. The remaining sample included 851 smaller firms and 3,113 larger firms.

As one might anticipate, the characteristics of the smaller firms and larger firms differ rather dramatically as reflected in Table 1. The mean sales for smaller firms were \$44,541 compared to \$5,020, 925 for larger firms. Sales totals were highly skewed, however, particularly for the larger firms. Median sales were \$40,000 for the smaller firms and \$895,520 for the larger firms. Similarly, the smaller firms had 2.14 employees on average compared to 41.26 employees for larger firms. The median number of employees was 1.5 and 10, respectively. Owner age was similar for the two groups, 50.96 years for the smaller firms and 51.39 years for the larger firms indicating that small firms owners are, on average, relatively mature. The smaller firms were slightly younger having an average age of 15.12 years compared to 18.01 years for the larger firms. Interestingly enough, the smaller firms were more profitable than the larger firms, possibly because they do not have the overhead that a larger firm may have. Average return on equity was 392% for the smaller firms and 240% for the larger firms. Median ROEs were a much more realistic 42% and 29%, however. Smaller firms in the lowest quartile were not profitable at all.

In terms of leverage, the two groups of firms used similar percentages of debt on average. The ratio of total debt to total assets was 67% for the smaller firms and 64% for the larger firms. The median percentages for leverage were 42% and 50% respectively, however. The ratio of external loans to total assets was 38% for smaller firms and 37% for larger firms; the corresponding medians were 19% and 25%. The average dollar amounts of total debt and externally acquired debt were quite different for the two groups, with the smaller firms showing much lower levels of total debt and externally

acquired debt as might be expected. As with the case of sales, debt levels were highly skewed. Smaller firms using debt had average total debt of \$48,087 but median debt of only \$6,615. The larger firms had average total debt of \$1,324,940 but median debt of only \$140,000. Similarly, external debt for smaller firms was \$64,691, compared to \$980,575 for larger firms. Medians for external debt were only \$10,208 for smaller firms and \$104,000 for larger firms suggesting that the majority of smaller firms used relatively little debt from external sources.

Table 2 also highlights some of the differences between smaller and larger firms. The smaller firms were more likely to be owned by women; 26.67% of the smaller firms were owned by women compared to 14.58% of the larger firms. The smaller firms were also less likely to be organized as corporations rather than as a partnership or sole proprietorship; 22.21% were so structured compared to 72.05% for the larger firms. Over half of the smaller firms were in service industries compared to 29.20% of the larger firms. Forty percent of the owners of smaller firms had attended college, compared to 55.03% of the owners of larger firms.

Borrowing behavior was also quite different between the smaller and larger firms. Interestingly enough, a high percentage of both had some type of loan, 60.40% of the smaller firms and 80.82% of the larger firms. Only 21.74% of the smaller firms had applied for a loan within the last 3 years, however, compared to half of the larger firms. Although the two groups had comparable credit histories, the smaller firms were less likely to provide collateral or personal guarantees for a loan. This could be because their firms lacked assets that could be used as collateral, or it could be a sign of greater risk aversion on the part of smaller firm owners.

Table 3 continues the comparison of very small and larger small firms by examining their use of various credit products as well as the average balance for each type of product. The NSSBF includes data on the usage of six different types of credit products; lines of credit, financial leases, commercial mortgages, vehicle loans, equipment loans, and "other" loans. Not surprisingly, the larger firms were significantly more likely to use each type of credit product and their average balances were considerably higher.

For the smallest firms, the most frequently used credit products were vehicle loans, lines of credit, and "other" loans in that order. Less than 10% of the smallest firms used financial leases, commercial mortgages, equipment loans, or "other" loans. The major credit products for the larger firms were lines of credit, vehicle loans, and equipment loans respectively. The comparison of usage between the two firms is particularly revealing for lines of credit. A line of credit is a very flexible financing tool and can be used for a variety of purposes, i.e. to finance inventories or accounts receivable or to cover an unanticipated cash shortfall. In addition, a line of credit is one of the few credit products that is not necessarily tied to specific collateral. Although 43.85% of the larger firms used lines of credit, only 10.34% of the smaller firms did. This suggests that smaller firms either did not see the need for a flexible financing tool such as a line of credit, or alternatively, that they were less able to obtain one, possibly due to lack of collateral or greater perceived risk on the part of lenders. These findings also suggest that if almost 90% of the smallest firms did not use lines of credit, they were using something else to finance short term financing needs, possibly earnings from the business, a home equity line, or a credit card.

As noted above, the balances for the credit products were all considerably smaller for the smallest firms as compared to the larger ones. Nevertheless, the average balances for some credit products including lines of credit (\$232,239), commercial mortgages (\$65,969), and other loans (\$37,203) were large enough to indicate both a need and a desire for external sources of capital on the part of some of the smallest small firms.

Table 4 examines the extent to which very small and larger firms use different types of credit providers. Three possible sources have been identified. "Bank" represents loans from commercial banks, traditionally a major source of financing for small firms. "Non-bank financial" includes sources such as credit unions, savings banks, S&I's, finance companies, leasing companies, mortgage banks, insurance or brokerage firms, venture capital, or American Express. Finally, "non-bank, non-financial" sources include other business firms, family or individuals, the SBA, or other government agencies.

Table 4 reveals that, in general, smaller firms are more reliant on traditional commercial bank financing than larger firms for credit products including lines of credit, vehicle loans, and "other" loans. Smaller firms are more reliant on non-bank financial sources for financial leases and commercial mortgages than larger firms. They are also more reliant on non-bank, non-financial sources for equipment loans than larger firms.

For smaller firms, commercial banks are the dominant source of credit for lines of credit, commercial mortgages, vehicle loans, equipment loans, and other loans. For larger firms, commercial banks are the dominant source of credit for lines of credit, commercial mortgages, equipment loans, and other loans. Both smaller and larger firms use non-bank financial sources as their major source for leases. Larger firms also use non-bank financial sources as their major source for commercial mortgages.

One of the more revealing insights that can be drawn from Table 4 is the fact that banks are, by far, the major source of lines of credit for smaller firms. This is also true for larger firms, but not to the same extent. As noted above, a line of credit is a relatively flexible financing tool that can be used for a variety of business purposes. Ninety-five percent of the smallest firms with lines of credit get them from banks, illustrating the importance of accessible and affordable bank credit to very small firms.

IV. MULTIVARIATE ANALYSIS

Although it appears from our univariate analysis that smaller firms are less likely to use debt capital and, when they do use it, use considerably less, univariate comparisons do not take into account the possible effect of several factors acting in concert. Multivariate analysis corrects for this shortcoming. In this study, we employ multiple regression analysis to relate the use of financial leverage and borrowing behavior to a set of variables representing both characteristics of the firm and of the firm owner. We sought to identify those characteristics that are the strongest predictors of firm leverage and usage of debt obtained from external sources. Our null hypothesis was that there is no difference between smaller firms and larger firms in terms of their use of financial leverage and externally acquired debt.

We utilized two measures of leverage to test our hypothesis. TDTA represents the ratio of total debt to total assets and is a measure of total firm leverage. Xloans represents the ratio of externally acquired loans to total assets and is a measure of the firm's willingness and ability to use "formal" rather than informal sources of capital. The regression model developed to test the hypothesis took the following form:

$$\text{TDTA (or Xloans)} = a_0 + b_1 \text{Logsales} + b_2 \text{Firmage} + b_3 \text{Female} + b_4 \text{Ed} + b_5 \text{Org} + b_6 \text{ROE} + b_7 \text{Badcred} + b_8 \text{Coll} + b_9 \text{Guaran} + e$$

The independent variables are defined in Appendix A. These variables were developed from the database to represent characteristics of the firm and the firm owner. Characteristics of the firm include size of the firm, age of the firm, organizational form, and profitability.

Size was used as an independent variable because prior research consistently indicates that larger firms are more likely to receive loans than smaller ones, possibly because they are more firmly established and are perceived to have greater staying power, sophistication, and resources (Ang, 1992, Cole, 1996, Cole & Wolken, 1995, Coleman, 1998, Ennew & Binks, 1994, Riding et al., 1994, Scherr et al., 1993). For this analysis, the log of 1992 sales was used as the independent variable to measure firm size. The logarithmic form of the sales variable was used because, as noted above, the sales of firms included in the sample were highly skewed.

Firm age was also selected as an independent variable since some prior research indicates that older and more firmly established firms are more likely to receive loans than younger ones (Cole, 1996, Ennew & Binks, 1994, Weinberg, 1994). Alternatively, one might anticipate that younger firms that are still going through a growth stage might have a greater need for debt capital and externally acquired debt capital.

Organizational form as measured by the independent variable, Org, was included to determine if firms that have adopted the corporate form of organization are more inclined to use financial leverage than firms that are partnerships or sole proprietorships. Corporations and S-corporations have the benefit of limited liability which may encourage greater risk-taking. Since sole proprietorships and partnerships are subject to unlimited liability, they may be reluctant to take on higher levels of debt (Brigham, 1992, Osteryoung et al., 1997).

Return on equity (ROE) was used to measure the profitability of the firm. In theory, more profitable firms should be better candidates for loans, because they are in a better position to pay them off. Scherr et al. (1993) found that start-up firms with higher anticipated profitability had higher ratios of debt to equity. Alternatively, less profitable firms may actually require higher levels of debt capital, because they do not generate sufficient earnings to fund themselves. Both Titman and Wessels (1988) and Johnson (1997) found an inverse relationship between leverage and profitability.

Characteristics of the business owner included independent variables representing gender, educational level, credit history, and willingness or ability to provide collateral and guarantees. Gender (Female) was included, because prior research indicates that women use less debt capital to finance their businesses than men. Some researchers suggest that women suffer from discrimination in the lending process (Brush, 1992, Neider, 1987, Riding & Swift, 1990, Scherr et al., 1993). Others contend that women are more risk averse and thus less likely to use debt which increases the riskiness of the firm (Brown & Segal, 1989, Chaganti, 1986, Collerett & Aubry, 1990). Yet others contend that the types of businesses women typically start, small service businesses, are not particularly attractive to lenders, because they have limited potential for profits and lack assets that can be used as collateral (Chaganti, 1986, Kalleberg & Leicht, 1991, Loscocco & Robinson, 1991).

The independent variable Ed is a dichotomous variable indicating whether or not the firm owner attended college and is a measure of human capital. College educated business owners may be in a better position to understand the requirements for operating a business and they may have the educational background to help them manage various aspects of the business. They may also be better equipped to prepare and present a loan application in the form that a lender wants to see. Correspondingly, bankers, most of whom are college educated, may associate higher levels of education with a greater likelihood for success.

The firm owner's credit history is represented by the variable Credit. In theory, someone with a history of credit difficulties should be less likely to be approved for a loan. Alternatively, someone with a history of credit difficulties may also be someone who is more likely to require and use debt. It is not unusual for small firms and their owners to experience periods of financial distress. Lenders may not necessarily take a negative view of these experiences, however, if the prior difficulties have been resolved and recent credit performance is satisfactory.

The variables Coll and Guaran are an indication of the firm owner's ability and willingness to provide collateral and guarantees for loans, both of which reduce risk to the lender and increase his or her willingness to lend (Binks & Ennew, 1996, Leeth & Scott, 1989, Titman & Wessels, 1988). The willingness to provide collateral and guarantees is also a measure of the firm owner's confidence in the business and his or her willingness to assume risk.

The results of our multivariate analysis of the full sample are included in Tables 5 and 6. In Table 5, the ratio of total debt to total assets was the dependent variable (TDTA). The variable representing size (logsales) was significant and positive indicating that larger firms carry a higher level of financial leverage, consistent with prior research. Firm age was significant and negative. Thus, younger firms used higher leverage, possibly because they are still growing and not generating sufficient profits in the form of retained earnings. The variable representing organizational form (Org) was significant and positive indicating that firms organized as corporations use higher levels of financial leverage. It may be that the benefit of limited liability protection encourages corporations to accept higher levels of financial risk.

More profitable firms use higher leverage; the variable ROE was significant and positive. This could be because profitable firms are in a better position to pay off debt, or it could be because high ROE firms may have relatively small amounts of equity invested in the firm. It is noteworthy that firms with a history of bad credit also used higher financial leverage, possibly because they need it, or alternatively because their owners have a higher tolerance for risk. Firms that were willing and able to provide collateral and guarantees carried higher levels of total debt.

Table 6 includes the results for the dependent variable Xloans representing the ratio of externally acquired loans to total assets. Table 6 shows an interesting departure in results from Table 5. Whereas larger firms used a higher ratio of total debt to total assets (TDTA), Table 6 reveals that smaller firms use a higher ratio of externally acquired debt to total assets (Xloans). This may be because smaller firms are less sophisticated in their working capital strategies and are less able to use trade credit as a source of capital. Other results in Table 6 are consistent with those in Table 5. Younger

firms, more profitable firms, firm owners with a history of credit difficulties, and firms willing to provide collateral and guarantees used a higher percentage of externally acquired debt.

As a further step in our analysis, we ran the TDTA and Xloans models for firms having sales of less than \$100,000 and those having sales of greater than or equal to \$100,000 to determine if there were any noteworthy differences in the results between the two groups. The results are presented in Tables 7 through 10.

Table 7 reveals that, the smaller firms, the more profitable firms, and firms willing to provide collateral and guarantees used a higher ratio of total debt to total assets. Larger firms, younger firms, firms organized as corporations, firm owners with a history of credit difficulties, and firms willing to provide collateral and guarantees used higher financial leverage (Table 8).

Table 9 reveals that, for smaller firms, firms organized as corporations, more profitable firms, and firms able to provide collateral and guarantees used a higher ratio of externally acquired debt. For larger firms, the level of externally acquired debt was associated with younger firms, more profitable firms, and firms able to provide collateral and guarantees (Table 10).

As a final step in our analysis, we sought to determine if there were differences in the rate of loan applications and approvals between smaller firms and larger firms. The NSSBF identifies firms that have applied for a loan within the last 3 years (MRLapp) and those that have been approved for their most recent loan application within the last 3 years (MRLget).

We began with the null hypothesis that there were no significant differences between smaller and larger firms in the rate of loan applications and approvals. To test this hypothesis we developed a logistic regression model in which loan applications (or approvals) were related to a series of explanatory variables. Logistic regression is preferable to ordinary least squares in instances where the dependent variable is categorical and, in this instance, dichotomous, rather than continuous.

The logistic regression model took the following form:

$$\text{MRLapp (or MRLget)} = a_0 + b_1\text{Size} + b_2\text{Firmage} + b_3\text{Female} + b_4\text{Ed} + b_5\text{Org} + b_6\text{ROE} + b_7\text{Badcred} + b_8\text{Coll} + b_9\text{Guaran} + e$$

In this model we substituted the dichotomous variable Size for the continuous variable Logsales to distinguish between the smaller firms and the larger ones included in the sample. Size had a value of 0 for firms having sales of less than \$100,000 and a value of 1 for firms having sales of greater than or equal to \$100,000.

The results of this analysis are included in Tables 11 and 12. The variable Size was significant and positive for both models indicating that larger firms were significantly more likely to apply for and to be approved for a loan within the last 3 years.

Tables 11 and 12 also reveal that firms organized as corporations were more likely to apply for loans, but were not more likely to get them. As discussed previously, firms having the corporate form of organization may be more willing to accept the risks associated with leverage because of limited liability protection. Firm owners having a history of credit difficulties were more likely to apply for loans, but, as Table 12 indicates, owners with no history of credit difficulties were more likely to be approved for them. This suggests that, from a lender's perspective, a track record of strong credit is desirable, because it increases the likelihood of being repaid. Firms willing and able to

provide collateral and guarantees were both more likely to apply for loans and to be approved for them. As with a strong credit history, willingness to provide collateral and guarantees reduces the riskiness of the loan to the lender. Similarly, borrowers who are willing to assume the risks that go with pledging collateral and guarantees may be less risk averse and hence more willing to accept the risks associated with financial leverage.

It is noteworthy that firm owners who had attended college were significantly more likely to have applied for a loan and been approved for one. It may be that more highly educated owners have a better understanding of the benefits of leverage; hence their higher level of loan applications. Similarly, it may be that more highly educated owners have acquired the knowledge and skills to prepare a successful loan application and to communicate effectively with bank lending officers.

The non-significant variables in this analysis were also of interest. First, there were no gender differences in either loan applications or loan approvals indicating that, controlling for other factors, women were just as likely to apply for and receive a loan as men. Second, there were no differences in terms of the age of the firm. One might have anticipated that younger and growing firms would be more likely to apply for loans, but this does not appear to have been the case. Finally, there were no differences in terms of profitability. One might guess that less profitable firms would be more likely to apply for loans, while more profitable firms would be more likely to be approved for them. Again, this expectation was not borne out by these results. From this analysis, it appears that the variables having the greatest impact on loan approvals were firm size, credit history, willingness to provide collateral and guarantees, and educational level of the firm owner.

V. CONCLUSIONS

This research examined the use of financial leverage and borrowing behavior of small firms included in the 1993 NSSBF. The use of debt by the smallest small firms was of particular interest. These findings reveal that even very small firms were willing to use financial leverage, possibly because their sources of equity are so limited. Sixty percent of the firms with sales of less than \$100,000 had some type of loan. The median ratio of total debt to total assets for these firms was 42%, while the median ratio of externally acquired loans to total assets was 19%. The most commonly used loan products were vehicle loans, lines of credit, and "other loans". Although average loan balances for the smallest firms were smaller than for the larger firms as one would anticipate, there does appear to be a need and desire for external sources of capital for a subset of the smallest firms. This was particularly evident in the product categories representing lines of credit, commercial mortgages, and other loans.

Multivariate analysis reveals that while larger firms used a higher ratio of total debt to total assets, smaller firms were more heavily reliant on externally acquired capital. This may be because smaller firms have less sophisticated working capital strategies and are less able to use trade credit as a source of financing. Major predictors of total leverage and leverage from externally acquired debt included firm profitability and the willingness to provide collateral and guarantees. There was also some indication that firms organized as corporations were willing to carry a higher level of debt, possibly due to the benefits provided by limited liability protection. Younger firms also appeared to use higher leverage, possibly because they do not generate retained earnings sufficient to fund their growth.

Logistic regression reveals that although smaller firms were willing to use financial leverage, they were less likely to have applied for a loan within the previous 3 years and less likely to have been approved for one. Larger firms, firms with more highly educated owners, and firms that were willing to provide collateral and guarantees were more likely to apply for and be approved for loans. It is noteworthy that although firms with a history of credit difficulties were more likely to apply, they were less likely to be approved.

Overall, these findings appear to indicate that the smallest small firms do use financial leverage and externally acquired debt. Although they are less likely to use major credit products than larger firms and their average balances are smaller, these results do demonstrate a need and desire for external sources of debt capital. Nevertheless, these results show that smaller firms are less likely to apply for external loans (possibly because they fear they will be turned down), and less likely to be approved for them.

These findings highlight the need for sources of debt capital that are available, affordable, and appropriate for the needs of very small firms. This is particularly true for flexible credit products that are not tied to specific collateral as is the case with vehicle loans and commercial mortgages. Examples might include reasonably priced business credit cards and lines of credit designed specifically for small firms. The relatively recent development of credit scored loans for small businesses is a step in the right direction in providing availability of capital to firms of this type. These findings also demonstrate the importance of continued funding through the U.S. Small Business Administration for programs that increase access to capital for smaller firms..

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Table 1
 Characteristics of Firms Included in the 1993 NSSBF

| Variable | Smaller Firms Mean Value (Median Value) N=851 | Larger Firms Mean Value (Median Value) N=3113 |
|------------------|--|--|
| Sales | \$44,541 (\$40,000) | \$5,020,935 (\$895,520) |
| Totemp | 2.14 (1.5) | 41.26 (10) |
| Ownage | 50.96 (50) | 51.39 (50) |
| Firmage | 15.12 (12) | 18.01 (14) |
| ROE | 3.92 (0.42) | 2.40 (0.29) |
| TDTA (ratio) | .67 (.42) | .64 (.50) |
| TD (amount)* | \$48,087 (\$6,615) | \$1,324,940 (\$140,000) |
| Xloans (ratio) | .38 (.19) | .37 (.25) |
| Xloans (amount)* | \$64,691 (\$3,600) | \$980,575 (\$104,000) |

*means and medians are shown for firms that actually used debt and externally acquired debt

Table 2
 Characteristics of Firms Included in the 1993 NSSBF

| Variable | Smaller Firms Percentage N=851 | Larger Firms Percentage N=3113 | Chi-Square | Prob |
|----------|--------------------------------------|--------------------------------------|------------|-------|
| Female | 26.67 | 14.58 | 68.661 | 0.001 |
| Org | 22.21 | 72.05 | 700.225 | 0.001 |
| Serv | 50.29 | 29.20 | 133.031 | 0.001 |
| Ed | 40.07 | 55.03 | 59.881 | 0.001 |
| Haveloan | 60.40 | 80.82 | 154.769 | 0.001 |
| MRLapp | 21.74 | 49.95 | 215.997 | 0.001 |
| Badcred | 21.86 | 24.77 | 3.091 | 0.079 |
| Coll | 15.39 | 43.17 | 220.747 | 0.001 |
| Guaran | 18.33 | 44.78 | 196.326 | 0.001 |

Table 3
Small Firms' Use of Credit Products

| Product | Smaller Firms Percentage N=851 | Larger Firms Percentage N=3113 | Chi-Square | Prob |
|------------------|--------------------------------------|--------------------------------------|------------|-------|
| Line of Credit | 10.34 | 43.85 | 323.159 | 0.001 |
| Ave. Balance* | \$232,239 | \$747,863 | | |
| Median | \$3,000 | \$50,000 | | |
| Financial Lease | 2.94 | 18.66 | 127.621 | 0.001 |
| Ave. Balance | \$12,046 | \$165,613 | | |
| Median | \$4,000 | \$30,000 | | |
| Commercial Mort. | 6.46 | 9.77 | 8.850 | 0.003 |
| Ave. Balance | \$65,969 | \$1,396,152 | | |
| Median | \$39,327 | \$213,064 | | |
| Vehicle | 16.92 | 30.04 | 58.016 | 0.001 |
| Ave. Balance | \$9,771 | \$65,773 | | |
| Median | 7,600 | \$14,494 | | |
| Equipment | 8.23 | 22.36 | 85.616 | 0.001 |
| Ave. Balance | \$13,862 | \$256,033 | | |
| Median | \$4,525 | \$40,000 | | |
| Other Loan | 9.28 | 14.84 | 17.516 | 0.001 |
| Ave. Balance | \$37,203 | \$741,085 | | |
| Median | \$10,000 | \$87,000 | | |

*means and medians are shown for the firms that actually used the credit product

Table 4
Small Firms' Sources of Credit

| | Smaller Firms N=851 | % | Larger Firms N=3113 | % |
|--------------------|------------------------|------|------------------------|------|
| Product | | | | |
| Line of Credit | | | | |
| Bank | \$10,441,088 | 95.5 | \$723,020,000 | 76.2 |
| Non-bank fin. | 385,108 | 3.5 | 219,350,000 | 23.1 |
| Non-bank, non-fin. | 110,918 | 1.0 | 6,409,371 | .7 |
| Total above | \$10,937,114 | | \$948,779,371 | |
| Financial Lease | | | | |
| Bank | 53,101 | 17.7 | 35,433,394 | 37.6 |
| Non-bank fin. | 214,406 | 71.3 | 52,224,514 | 55.4 |
| Non-bank, non-fin. | 33,053 | 11.0 | 6,583,253 | 7.0 |
| Total above | \$300,560 | | \$94,241,161 | |
| Commercial Mort. | | | | |
| Bank | 1,796,334 | 49.5 | 222,200,000 | 52.5 |
| Non-bank fin. | 1,505,098 | 41.5 | 128,480,000 | 30.3 |
| Non-bank, non-fin. | 326,888 | 9.0 | 72,915,734 | 17.2 |
| Total above | \$3,628,320 | | \$423,595,734 | |
| Vehicle | | | | |
| Bank | 809,983 | 57.6 | 23,502,743 | 38.3 |
| Non-bank fin. | 556,874 | 39.6 | 36,843,463 | 60.1 |
| Non-bank, non-fin. | 40,279 | 2.9 | 982,095 | 1.6 |
| Total above | \$1,407,136 | | \$61,328,301 | |
| Equipment | | | | |
| Bank | 619,300 | 64.6 | 119,030,000 | 72.3 |
| Non-bank fin. | 138,748 | 14.5 | 33,591,220 | 20.4 |
| Non-bank, non-fin. | 200,960 | 21.0 | 11,991,529 | 7.3 |
| Total above | \$959,008 | | \$164,612,749 | |
| Other Loan | | | | |
| Bank | 1,360,839 | 46.6 | 108,900,000 | 36.6 |
| Non-bank fin. | 530,575 | 18.2 | 100,560,000 | 33.8 |
| Non-bank, non-fin. | 1,027,634 | 35.2 | 88,174,559 | 29.6 |
| Total above | \$2,919,048 | | \$297,634,559 | |

Table 5
Dependent Variable: TDTA
Full Sample

F Value: 67.05
R-square: 0.1513

| Variable | Parameter Estimate | Prob>t |
|-----------|--------------------|----------|
| Intercept | 0.2293 | 0.0001** |
| Logsales | 0.0101 | 0.0001** |
| Firmage | -0.0016 | 0.0001** |
| Female | -0.0002 | 0.9824 |
| Ed | 0.0056 | 0.5170 |
| Org | 0.0317 | 0.0023** |
| ROE | 0.0065 | 0.0001** |
| Badcred | 0.0434 | 0.0001** |
| Coll | 0.0788 | 0.0001** |
| Guaran | 0.0704 | 0.0001** |

**results significant at the .01 level

Table 6
Dependent Variable: Xloans
Full Sample

F Value: 38.293
R-square: 0.0924

| Variable | Parameter Estimate | Prob>t |
|-----------|--------------------|----------|
| Intercept | 0.2921 | 0.0001** |
| Logsales | -0.0078 | 0.0020** |
| Firmage | -0.0011 | 0.0002** |
| Female | -0.0024 | 0.8293 |
| Ed | 0.0053 | 0.5317 |
| Org | 0.0117 | 0.2510 |
| ROE | 0.0035 | 0.0001** |
| Badcred | 0.0029 | 0.0001** |
| Coll | 0.0959 | 0.0001** |
| Guaran | 0.0783 | 0.0001** |

**results significant at the .01 level

Table 7
Dependent Variable: TDTA

Sales < \$100,000

F Value: 12.179

R-square: 0.1305

| Variable | Parameter Estimate | Prob>t |
|-----------|--------------------|----------|
| Intercept | 0.4063 | 0.0001** |
| Logsales | -0.0047 | 0.6100 |
| Firmage | -0.0010 | 0.2706 |
| Female | -0.0169 | 0.4320 |
| Ed | -0.0079 | 0.6792 |
| Org | 0.0586 | 0.0130* |
| ROE | 0.0062 | 0.0001** |
| Badcred | -0.0033 | 0.8852 |
| Coll | 0.1164 | 0.0001** |
| Guaran | 0.0707 | 0.0077** |

*results significant at the .05 level

**results significant at the .01 level

Table 8
Dependent Variable: TDTA

Sales >= \$100,000

F Value: 56.199

R-square: 0.1606

| Variable | Parameter Estimate | Prob>t |
|-----------|--------------------|----------|
| Intercept | 0.0748 | 0.0815 |
| Logsales | 0.0211 | 0.0001** |
| Firmage | -0.0018 | 0.0001** |
| Female | 0.0079 | 0.5612 |
| Ed | 0.0075 | 0.4359 |
| Org | 0.0270 | 0.0202* |
| ROE | 0.0066 | 0.0001** |
| Badcred | 0.0609 | 0.0001** |
| Coll | 0.0691 | 0.0001** |
| Guaran | 0.0700 | 0.0001** |

*results significant at the .05 level

**results significant at the .01 level

Table 9
Dependent Variable: Xloans

Sales < \$100,000

F Value: 10.768

R-square: 0.1172

| Variable | Parameter Estimate | Prob>t |
|-----------|--------------------|----------|
| Intercept | 0.1767 | 0.0909 |
| Logsales | 0.0003 | 0.9747 |
| Firmage | -0.0005 | 0.5855 |
| Female | 0.0064 | 0.7781 |
| Ed | 0.0057 | 0.7757 |
| Org | 0.0840 | 0.0007** |
| ROE | 0.0027 | 0.0011** |
| Badcred | -0.0324 | 0.1843 |
| Coll | 0.1491 | 0.0001** |
| Guaran | 0.1273 | 0.0001** |

*results significant at the .05 level

**results significant at the .01 level

Table 10
Dependent Variable: Xloans

Sales \geq \$100,000

F Value: 30.856

R-square: 0.0920

| Variable | Parameter Estimate | Prob>t |
|-----------|--------------------|----------|
| Intercept | 0.2738 | 0.0001** |
| Logsales | -0.0053 | 0.1002 |
| Firmage | -0.0011 | 0.0002** |
| Female | -0.0041 | 0.7498 |
| Ed | 0.0046 | 0.6184 |
| Org | -0.0050 | 0.6540 |
| ROE | 0.0038 | 0.0001** |
| Badcred | 0.0129 | 0.2441 |
| Coll | 0.0891 | 0.0001** |
| Guaran | 0.0705 | 0.0001** |

*results significant at the .05 level

**results significant at the .01 level

Table 11
 Dependent Variable: MRLapp
 Full Sample

| Variable | Parameter Estimate | Prob>t |
|-----------|--------------------|----------|
| Intercept | -2.3582 | 0.0001** |
| Size | 0.4692 | 0.0003** |
| Firmage | -0.0012 | 0.7024 |
| Female | -0.1353 | 0.2760 |
| Ed | 0.2927 | 0.0015** |
| Org | 0.2834 | 0.0059** |
| ROE | -0.0017 | 0.7071 |
| Badcred | 0.3453 | 0.0015** |
| Coll | 2.4129 | 0.0001** |
| Guaran | 1.1956 | 0.0001** |

**results significant at the .01 level

Table 12
Dependent Variable: MRLget
Full Sample

| Variable | Parameter Estimate | Prob>t |
|-----------|--------------------|----------|
| Intercept | -2.8449 | 0.0001** |
| Size | 0.6538 | 0.0001** |
| Firmage | 0.0039 | 0.2370 |
| Female | -0.2473 | 0.0650 |
| Ed | 0.3764 | 0.0001** |
| Org | 0.1943 | 0.0750 |
| ROE | -0.0005 | 0.9109 |
| Badcred | -0.3096 | 0.0079** |
| Coll | 2.5988 | 0.0001** |
| Guaran | 1.1011 | 0.0001** |

**results significant at the .01 level

Appendix A

Definition of Variables:

TDTA: the ratio of total debt to total assets

Xloans: the ratio of external loans to total assets

MRLapp: dichotomous variable coded as 1 if the owner applied for a loan within the last 3 years

MRLget: dichotomous variable coded as 1 if the most recent loan applied for was granted

Logsales: log of 1992 sales

Firmage: number of years the firm has been in existence

Female: a dichotomous variable coded as 1 if the firm was at least 50 percent owned by women

Ed: dichotomous variable coded as 1 if the owner had attended college

Org: dichotomous variable coded as 1 for S-Corporation or C-Corporation

ROE: return on equity; 1992 net income divided by 1992 total equity

Badcred: dichotomous variable coded as 1 if the owner had declared bankruptcy within the last 7 years, if the owner had personal delinquencies, if the firm had business delinquencies, or if the owner had judgments rendered against him.

Coll: collateral required on loans received

Guaran: guarantees required on loans received