

## SMALL FIRMS' USE OF FINANCIAL LEVERAGE: EVIDENCE FROM THE 1993 NATIONAL SURVEY OF SMALL BUSINESS FINANCES

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### ABSTRACT

*This research examines capital structure theory as it applies to small, privately held firms. We hypothesized that, given the fine line between the firm and the firm owner in small firms, lenders should take both the characteristics of the firm and those of the borrower into consideration. Our findings reveal that leverage is predominantly a function of firm characteristics rather than owner characteristics. The owner's educational level, however, was a positive predictor of external debt, suggesting that lenders may use education as a proxy for human capital.*

### INTRODUCTION

In recent years the importance of small businesses to the United States economy has been widely recognized. According to the U.S. Small Business Administration (*The Facts About Small Business*, 1997), small businesses employ 53 percent of the workforce. In addition they contribute 47 percent of sales and 51 percent of gross domestic product. Small businesses have become the major source of new jobs as well as product and service innovations.

Key issues for small businesses include financing, growth, profitability, and ownership structure. These concerns, and others, are addressed by research in the areas of small firm and entrepreneurial finance, both of which are producing a rapidly growing set of findings. Some of the most interesting questions in small firm finance research relate to the extent to which the principles of corporate finance "fit" the small firm. Almost every undergraduate business major includes a business finance course in which we teach theories of present value, risk, capital structure, cost of capital, and capital budgeting,

typically within the framework of a corporate environment. Do these theories and principles, which were developed within the context of the large, publicly owned firm, appear to fit when we apply them to small firms which vastly outnumber large ones?

This paper explores the relevance of current theories pertaining to capital structure and leverage while attempting to identify factors contributing to small firm use of debt as a financing source. Prior research on capital structure, of which there is a considerable quantity, focuses heavily on the use of debt within the context of publicly held, relatively large, corporations. There are few studies addressing the issue of capital structure in small firms, and many of those rely on a relatively small sample of firms. This study explores small firm capital structure using a very large, national data sample. It is our hypothesis that the use of debt in small firms is determined by characteristics of the firm owner as well as by characteristics of the firm. This is consistent with the notion that, for small firms, the financial affairs of the firm are inseparable from those of its owner.

### CAPITAL STRUCTURE THEORY

Modigliani and Miller's (1958) theory of capital structure is based on the notion that firms will select the mix of debt and equity that minimizes their weighted average cost of capital, thereby maximizing the value of the firm. Because interest expense is tax deductible, debt tends to be favored over equity as a source of capital. It therefore follows that firms, in principle, act to minimize the cost of capital and maximize the value of the firm by financing exclusively with debt. This view assumes that there are no real resource costs associated with the issuance or exchange of securities, financial distress, or even bankruptcy and financial reorganization.<sup>1</sup>

In the case of privately held small businesses, however, the decision to finance with debt rather than equity may be driven by necessity rather than choice, because small firms do not have the same access to capital, particularly equity capital, that larger public firms do. Small firms are not able to issue publicly held debt or equity or even commercial paper because of their size and the high cost of issuing securities. As a result, small firms tend to be heavily reliant on debt in the form of bank financing and trade credit.

Asymmetric or incomplete information between the borrower and the lender also represents a potential financing problem for small privately held firms as noted by Ang (1992) and Weinberg (1994). One of the assumptions in Modigliani and Miller is that investors and managers have access to the same information regarding the firm. This assumption would presumably seldom be a realistic one in the case of small firms that do not publish audited financial

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<sup>1</sup>In a financial reorganization the old debt would simply become new equity and then new debt would be substituted for the new equity.

statements. In instances of this type, information regarding the financial health of the firm is often incomplete, inaccurate, or simply unavailable.

Small firms, because of their tendency rely on debt capital, are also particularly susceptible to the problems of financial distress and failure. Failure rates in the range of 50 to 75 percent are commonly cited (Bates & Nucci, 1989; Cochran, 1981), making it difficult for small firms to raise external capital from either debt or equity providers. Due to the lack of publicly available information and the higher risk of failure, monitoring costs are relatively higher for suppliers of capital to small firms than for those dealing with larger, established firms. Thus, capital may be unavailable to small firms, or it may be available only at relatively high rates of interest. Frequently, lenders try to mitigate the risks of lending to small firms by demanding collateral or personal guarantees. Since there is often a fine line separating the finances of the business from the finances of the business owner in the case of the small firm, such requirements tend to add to the risks faced by small business owners and entrepreneurs, as well as limit their flexibility.

Others have suggested alternatives to the Modigliani and Miller theory of capital structure. Timmons (1994) observes that capital requirements are different at different stages of firm growth. Small young firms may be able to draw capital from internal sources such as earnings and informal sources such as family and friends. As the successful firm grows, however, more capital is required to finance growth, and the firm typically needs at some point to turn to external sources such as banks and the public debt and equity markets.

Myers (1984) alludes to a "pecking order" theory of finance, grounded in the external costs of monitoring and the concept of asymmetric information, that suggests that firms tend to use internally generated funds in the form of retained earnings before turning to external sources. When retained earnings are exhausted, firms will then seek out sources of debt and will use external equity only as a last resort. Myers notes that new equity represents the most costly form of financing. In a subsequent paper, Myers and Majluf (1984) observe that issuing equity may also be interpreted by the financial markets as implying that the firm is overvalued. Given a choice, firms will prefer to finance using "financial slack" consisting of cash, marketable securities, and low risk debt. The decision to issue new equity externally can be viewed as a signal that the firm lacks financial slack and that the existing owners are unable or unwilling to put up additional capital.

Prior research documents heavy reliance by small businesses on debt as a source of capital. Using the COMPUTSTAT® database both Titman and Wessels (1988) and Dwyer and Lynn (1989) found that small firms use significantly more debt, particularly short-term debt, than do 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 empirical findings are confirmed in a subsequent study by Osteryoung et al. (1997) in which small privately owned firms were compared with large publicly owned firms on the

basis of 13 selected financial ratios. Studies by Carter and Van Auken (1990) and Van Auken and Holman (1995) found that small firms on average have lower levels of cash, higher accounts payable, 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. This strategy has the effect, of course, of reducing liquidity and increasing risk, though it potentially provides the tax advantage of deductible interest payments.

Scherr et al. (1993) found that commercial banks were the major source of debt for small firm startups, followed by loans from family members. Using a nationwide sample of small businesses, Petersen and Rajan (1994) and Cole and Wolken (1995, 1996) also found that commercial banks were the major providers of credit and other financial services to small businesses. These findings are consistent with both Myers' pecking order theory and Ang's contention that small firms have less access to sources of debt and equity (1992).

This paper employs a substantial database to explore factors affecting the use of debt leverage by small firms, both in terms of total debt and that part of total debt obtained from external sources. It seeks to identify characteristics of both the firm and of the firm owner that contribute to the use of debt in the capital structure of the small firm.

## EMPIRICAL ANALYSIS

### Hypotheses and Methodology

We began with the hypothesis that the financing behavior of small firms and their resulting capital structures are affected by characteristics both of the firm and of the firm owner. This is consistent with Ang (1992) and Ang et al. (1995) who contend that there is a lack of separation between the financial affairs of small firms and their owners. Thus, the characteristics of small firm owners may have a very direct impact on their willingness or ability to use debt. We sought to identify the variables, including variables representing owner characteristics, that are the strongest predictors of firm leverage. In addition, we attempted to determine if the characteristics predicting total leverage, which include trade credit, differ from those predicting externally obtained debt only.

We employed two leverage measures to test our hypotheses; TDTA, representing the ratio of total debt to total assets and XLOANS, the ratio of externally obtained loans to total assets. The ratio of total debt to total assets (TDTA) includes trades credit as well as bank loans and other forms of external credit. Although trade credit is a major source of financing for small firms, it differs from external credit because it does not necessarily have to be approved and granted; it can be generated simply by not paying one's suppliers. Alternative external debt (XLOANS) are loans obtained from external creditors and are thus a more stringent measure of the firm's creditworthiness. A firm could conceivably have a high ratio of total debt to total assets because it has stretched out its payables, but a low ratio of external debt because it is not sufficiently

creditworthy to be granted a loan. We eliminated from the sample any firms reporting TDTA or XLOANS of zero because our focus was on firms using leverage. In addition, we eliminated firms showing leverage greater than 100 percent of assets on the grounds that negative equity was inconsistent with the notion of a going concern and in all likelihood served to indicate firms that had book balance sheets that failed to present a realistic value for assets.

We employed multiple regression analysis using the following specification:

$$TDTA \text{ (or XLOANS)} = a_0 + b_1Lnsales + b_2Firmage + b_3Firmage^2 + b_4Ownage + b_5Org + b_6ROE + b_7Credit + b_8Coll + b_9Educ + b_{10}Exper + b_{11}Famexp + b_{12}Female + e$$

The independent variables are defined in Table 1.

These variables were developed from the database to represent characteristics of the firm and the business owner. We wished to examine the hypothesis that, in the case of the small firm, lenders take owner as well as firm characteristics into account in deciding whether to grant credit.

In our model, characteristics of the firm are represented by firm size, firm age, organizational status, and firm profitability. Prior research indicates that larger firms are more likely to receive loans than smaller companies, possibly because they are more firmly established, have more market power, or have more resources at their disposal (Ang, 1992; Cole, 1996; Cole & Wolken, 1995; Coleman, 1998; Ennew & Binks, 1994; Fabowale et al., 1995; Riding et al., 1994; Scherr et al., 1993). Other research indicates, however, that small firms rely more heavily on debt than larger firms do (Carter & Van Auken, 1990; Dwyer & Lynn, 1989; Osteryoung et al., 1997; Titman & Wessels, 1988; Van Auken & Holman, 1995). *Lnsales* was selected as an independent variable measuring firm size; the logarithmic form was adopted because the sample's distribution of firm size, as noted, was highly skewed. We anticipated a positive relationship between firm size and leverage.

*Firmage* was selected as an independent variable because prior research has suggested that older and more firmly established firms are more likely to receive loans than younger firms (Cole, 1996; Ennew & Binks, 1994; Weinberg, 1994). One would therefore anticipate a positive relationship between *firmage* and leverage. *Firmage*<sup>2</sup> was used as a second age variable to test our belief that the relationship between firm age and leverage may be a curved rather than a linear relationship, given that debt leverage, as we measured it, is bounded by the range from zero to 100 percent. Because we measured debt leverage in relation to assets, with an upper limit of 100 percent, we expected the relationship between

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<sup>2</sup>Some of this enormous profitability presumably includes a return to the owners' human capital.

leverage and firm age to be parabolic or asymptotic within the relevant range of the independent variable.

**Table 1. Independent Variables Used in Regression Models**

Lnsales	the natural logarithm of 1992 sales
Firmage	the age of the firm
Firmage <sup>2</sup>	the squared value of the age of the firm
Ownage	age of the owner
Org	a dichotomous value coded as 0 for sole proprietorships and partnerships, and 1 for S-corporations and corporations
ROE	return on equity
Credit	a dichotomous variable coded as 1 if firm owner had experienced bankruptcy or had a judgement rendered against him, or if the owner or firm had a history of personal or business delinquency
Coll	a dichotomous variable coded as 1 if the firm had put up collateral for some type of debt
Educ	a dichotomous variable coded as 1 if the owner had at least a 4-year college education
Exper	the owner's years of experience in this business or some other business
Famexp	a dichotomous variable coded as 1 if the business owner inherited a family business
Female	a dichotomous variable coded as 1 if the firm was at least 50 percent owned by women

The variable representing organizational form, Org, was included to investigate whether firms that have adopted the corporate form of organization have an advantage over firms that have not. This would suggest a positive relationship between the variable Org and the dependent variable. Corporations and S-corporations have the benefit of limited liability, which may encourage greater risk-taking and willingness to assume debt. Sole proprietorships and general partnerships have unlimited liability, however, and their owners and partners are personally liable in the event of bankruptcy or default (Brigham, 1992; Osteryoung et al., 1997). This fact may tend to discourage proprietorships and partnerships from using high levels of debt.

Finally, return on equity (ROE) was chosen to represent the profitability of the firm. In principle, profitable firms should be better candidates for debt because they are in a better position to pay it off, leading one to anticipate a positive relationship between profitability and leverage. 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 require more debt because they do not generate sufficient earnings to cover their costs, as would be implied by Myers' pecking order theory. Both Titman & Wessels (1988) and Johnson (1997) found that leverage was negatively related to profitability.

A potential difficulty associated with ROE as the measure of profitability in this study is that the causal linkages between profitability and financial leverage operate in both directions. ROE is itself a function of leverage, which affects both the numerator and the denominator of the ROE ratio. Return on assets (ROA) is also a function of leverage. EBIT would have been a much better measure of leverage for our purposes because it is independent of leverage, but we were unable to develop a measure of EBIT for firms in the sample from the information contained in the database. When we substituted ROA for ROE as the measure of profitability in our regression analysis, we obtained qualitatively similar results.

While the ROE data were positively skewed, we did not transform them. The reason was that the underlying relationship between profitability and leverage, in the presence of default risk, should be approximately linear. We truncated the ROE distribution at zero because negative values for ROE are inconsistent with the notion of a going concern.

Characteristics of the business owner were represented in the model by variables for owner age, education, years of experience, prior experience in a family-owned business, credit history, and ability to provide collateral. We anticipated a positive relationship between each of these variables and measures of leverage. Owner age was selected because prior research in the investments field indicates that as investors age, they become increasingly risk averse (Cohn et al., 1975; Morin & Suarez, 1983). Small business owners are typically undiversified in terms of their personal portfolios; the bulk of their assets is often tied up in the firm. Thus, the same relationship between age and risk aversion or unwillingness to take on debt may hold for the owners of small firms. In light of that, we would expect a negative relationship between age and leverage.

The variables representing the owner's educational level (Educ), years of business experience (Exper), and prior experience with a family business (Famexp) are measures of human capital. They represent knowledge and experience that may serve to improve the owner's chances of business success and increase the likelihood of the firm repaying its debt. Bankers probably view someone who has completed college as having the ability to stick with a task to completion. Someone with prior business experience has been exposed to the vicissitudes of a small business. Similarly, someone who grew up in a family business has, in all likelihood, had exposure to small business issues and coping

strategies from his or her earliest years. From a lender's perspective, these qualities may make a small business owner a more desirable lending candidate. Scherr et al. (1993) found that owner experience and family business experience were positively related to total leverage, though the relationship did not appear to hold for borrowings from financial institutions. The firm owner's credit history is represented by the variable *Credit*. In principle, someone with a history of credit difficulties should be less able to obtain debt. On the other hand, someone who has experienced either personal or business financial distress may be more likely to require debt. Many small firms and their owners experience some type of financial distress at some point in time. Lenders may not necessarily view this experience as a disincentive to lend, however, if the prior difficulties have been addressed and resolved satisfactorily.

The variable *Coll* indicates that the firm provided collateral for some type of loan. A business owner's willingness to provide collateral should increase the likelihood of obtaining debt because it reduces the lender's risk (Binks & Ennew, 1996; Leeth & Scott, 1989; Titman & Wessels, 1988). In addition, willingness to provide collateral is an indication of the small business owner's willingness to assume risk. It therefore represents a comforting signal to the lender. Finally, a variable representing gender (*Female*) was included to capture gender differences in capital structure policy. Some prior research has suggested that women-owned businesses are less likely to use debt for a variety of reasons including credit discrimination (Brophy, 1989; Brush, 1992; Neider, 1987; Riding & Swift, 1990; Scherr et al., 1993) and greater risk aversion (Brown & Segal, 1989; Chaganti, 1986; Colterett & Aubry, 1990; Olsen & Currie, 1992; Scherr et al., 1993). Others have contended that women-owned businesses do not require as much external capital as men-owned businesses because they are smaller and more likely to be concentrated in lines of business that are not very "asset intensive", such as personal services (Chaganti, 1986; Kallenberg & Leicht, 1991; Loscocco & Robinson, 1991). In light of this prior research, we anticipated a negative relationship between gender and leverage.

### **The Sample**

Data for this research were drawn from the 1993 National Survey of Small Business Finances (NSSBF) conducted by the Federal Reserve and the U.S. Small Business Administration. This study included a national sample of privately owned small firms. "Small" was defined as fewer than 500 employees. Over four thousand small businesses were interviewed by telephone on a stratified sampling basis. The purpose of the study was to collect balance sheet and income statement data for 1992 and also information on the firms' use of financial services and financial service providers. This study is the most comprehensive and most recent of its type.



**Table 2. Characteristics of the NSSBF Database**

Variable	N	Mean	STD	1stQ	Med.	3rdQ
Sales (\$)	4637	3,681,277	11,731,358	100,000	400,000	2,300,000
Assets (\$)	4637	1,694,613	6,570,578	32,000	153,320	882,803
Totemp	4637	31.55	61.94	2	5.5	31
Firmage	4637	15.31	13.61	6	12	20
Ownage	4637	50.17	11.35	42	49	57
Exper.	4637	19.82	11.31	11	18	26
ROE	4637	2.6	9.95	0	.24	1.25
TDTA	3906	.45	.27	.22	.44	.65
XLOANS	3186	.38	.26	.16	.34	.56

Tables 2 & 3 provide summary statistics for variables of interest. Dividing the sample into quartiles sheds additional light on the characteristics of the underlying population of small firms. In particular, a number of variables relating to firm size show evidence of positive skewness. With respect to sales, the firm at the top of the third quartile had annual sales of \$2.3 million while the mean for the entire sample was much higher at \$3.68 million. The relatively high mean value indicates that the distribution of sales is dominated by the very largest firms.

The distribution of firm assets was also positively skewed. While the firm at the top of the third quartile had assets of \$.88 million, the sample mean was almost twice as large at \$1.69 million. The same holds true for the variable representing number of employees (Totemp). Firms at the upper boundary of the third quartile had 31 employees while the sample mean was 31.55 employees.

Variables representing firmage, owner age, and owner experience were more evenly distributed. The average firm age was 15.31 years indicating that the firms in this data set were, on the whole, relatively well established. In addition, firm owners were relatively mature with an average age of 50.17 years and average business experience of 19.82 years.

Firm profitability as measured by return on equity (ROE) was also highly skewed. The average ROE for the sample was 260 percent.<sup>2</sup> The median ROE was a much more modest 24 percent, however, and firms in the bottom quartile were not profitable at all in 1992. In terms of leverage, the average ratio of total debt to total assets was 45 percent. The lowest quartile of firms had a ratio of only 22 percent. Similarly, although the average ratio of external loans to total assets was 38 percent, the lowest quartile of firms had a ratio of only 16 percent.

**Table 3. Characteristics of the NSSBF Database; Categorical Variables**

Variable	N	%
Gender		
Male	3797	81.9
Female	840	18.1
Org. Type		
Sole prop.	1492	32.2
Partner.	337	7.3
S-Corp.	1100	23.7
Corp.	1708	36.8
Industry		
Service	1569	33.8
Non-service	3068	66.2
Credit History		
Problems	1156	24.9
No problem	3481	75.1
Collateral		
Yes	1695	36.6
No	2942	63.4
Education		
Finished college	2409	52
Did not finish	2228	48
Founded bus.		
Yes	3314	71.5
No	1323	28.5
Family business		
Yes	3774	81.4
No	863	18.6

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Table 3 provides information on several categorical variables of interest. Eighty-two percent of the firms in the sample were owned by men. Seventy-two



**Table 5. Dependent Variable: XLOANS**

F Value: 24.336  
 Prob>F: 0.0001

R-Square: 0.0845  
 N: 3178

Variable	Parameter Est.	T for H <sub>0</sub>	Prob>t
Intercept**	0.6260	16.587	0.0001
Lnsales**	-0.0227	-8.400	0.0001
Firmage**	-0.0039	-5.869	0.0001
Firmage <sup>2</sup> **	0.0000	3.123	0.0018
Ownage	0.0011	1.890	0.0589
Org	-0.0037	-0.345	0.7303
ROE**	0.0039	8.732	0.0001
Credit	0.0111	1.100	0.2713
Coll**	0.0625	6.593	0.0001
Educ*	0.0180	1.977	0.0481
Exper	0.0003	0.466	0.6416
Famexp	0.0043	0.235	0.8144
Female	0.0158	1.302	0.1931

\*results significant at .05 level

\*\*results significant at .01 level

### FINDINGS

The results of our analyses are presented in Tables 4 and 5. The statistically significant independent variables represented primarily firm rather than owner characteristics. Firm size was significant and positive for the TDTA model but significant and negative for the XLOANS model. This finding suggests that, although larger firms have a higher percentage of total debt, smaller firms have a higher percentage of loans, possibly because they are less sophisticated in managing their working capital accounts. Smaller firms may also have less opportunity to stretch out payables or speed up receivables and thus reduce their need for external capital.

Contrary to our expectation, firmage was significant and negative in both models, revealing that younger firms have higher leverage. This result may indicate that younger firms are still growing and unable to satisfy the capital requirements of growth with retained earnings alone. The variable Firmage<sup>2</sup> was significant and positive, suggesting that the relationship between leverage and age of the firm is curved rather than linear, as we expected.

Organizational form as measured by the variable Org was significant and positive in the TDTA model, indicating that S-corporations and corporations use a higher percentage of debt than do partnerships or sole proprietorships. The variable Org was not significant in the XLOANS model, however, suggesting that unincorporated firms are not at a relative disadvantage in their attempts to obtain loans from financial institutions.

Return on equity, a measure of profitability, was highly significant and positive in both models, revealing that profitable firms use greater leverage and external debt than unprofitable ones. This is possibly the case because profitable firms are more attractive to credit providers who are concerned with a borrower's ability to pay off a loan or supplier credit, but also because of the potential beneficial effect of leverage on profit per dollar of equity.

The variable representing credit history was significant and positive for the TDTA model but not for the XLOANS model. This result suggests that firms that have had some type of credit difficulty have a higher percentage of debt, but they are not more likely to have a higher percentage of external loans, where credit history may enter negatively into the lending decision.

The variable representing collateral (Coll) was significant and positive for both models, indicating that firms that provide collateral do exhibit higher levels of total debt and externally obtained loans. Collateral reduces the risk to the lender and makes it possible for some firms to obtain credit or to obtain it under more favorable terms.

Surprisingly, variables representing owner rather than firm characteristics were not significant for the most part. This finding held for variables representing owner age, years of experience, experience with a family business, and gender. The variable representing education (Educ) was significant and positive in the second model (XLOANS) but not in the first (TDTA). Business owners who had completed college were more likely to obtain loans than owners who had not, suggesting that lenders may use educational level as a predictor for business success and ability to repay a loan. Oddly enough, however, years of business experience, which many believe is strongly associated with of entrepreneurial success, was not significant in either model.<sup>3</sup>

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<sup>3</sup>Given the enormous size of the sample, we were pleasantly surprised by the relatively large magnitude of the R<sup>2</sup> statistics we obtained.

## DISCUSSION

The empirical literature on the role of debt leverage in the small firm is, as we have observed, frequently contradictory. The results of the research reported in this paper, which relied on a potentially definitive set of data, indicate that small firm leverage is a function of firm size, firm age, profitability, organizational structure, and the willingness or ability to supply collateral. These findings seem to support theories put forth by Timmons (1994), Myers (1984) and Myers and Majluf (1984). Timmons contends that capital requirements and sources of financing differ at different stages of firm growth. Thus, as in the case of this research, younger, growing firms are more likely to require external financing than more mature ones that are able to "self finance" with retained earnings to a large extent.

Our results also show that size is a positive predictor of total leverage but a negative predictor of externally obtained debt. Thus, larger firms use more total debt, but smaller firms use more debt from financial institutions. This suggests, consistent with Myers' "pecking order" theory (1984), that larger firms are more adept at managing their financial slack in the form of net working capital and are able to avoid turning to external sources of debt and equity.

Finally, Myers and Majluf (1984) discuss the problem of asymmetric information and signaling. They contend that the need to issue external equity sends a negative signal to investors to the effect that the firm does not have sufficient financial slack or the capacity to raise debt. Our results show that profitability is a strong predictor of both total leverage and leverage from external sources. Profitable firms generate higher financial slack in the form of retained earnings, thus eliminating the need for external equity. In addition, superior results send a positive signal to potential lenders, thus reducing the negative effects of asymmetric information. The fact that the variable representing collateral was significant and positive in both models reinforces this argument since collateral provides another way for firms to send a positive signal to lenders. By pledging either personal or business assets and thereby placing them at risk, owners signal not only their belief that the firm will be successful, but also their view that the probability of loss to the lender (and therefore to themselves) is modest.

An interesting and unexpected finding from this research is that leverage and external leverage are predominantly determined by characteristics of the firm rather than characteristics of the firm owner. Given the blurring of lines between firm and owner in small businesses, one might have expected owner characteristics to play a larger role. However, owner age, years of experience, prior experience with a family business, and gender were not significant variables in either model.

The sole exception to this general rule was the variable representing education, which was significant and positive in the XLOANS model. This suggests that lenders, most of whom are college educated, use educational

attainment as a proxy for human capital, because it represents a set of experiences and accomplishments with which they can identify.

This surprising result should be viewed as encouraging. Data are more readily available on small firms than on their owners. Our findings, especially those with respect to the effect of firm age, suggest that a potentially fruitful model for building a theory of small firm finance is one based on the idea of a "firm life cycle."

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*"Small Firms' Use of Financial Leverage: Evidence from the 1993 National Survey of Small Business Finances"*

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