

Small Firm Use of Leverage: A Comparison of Men and Women-Owned Firms

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Abstract

Prior research and anecdotal evidence suggests that women-owned small businesses use less debt than men. This study uses data from a nationwide sample of small businesses to determine differences in leverage between men and women-owned firms. Findings reveal that the primary determinants of leverage are firm size, firm age, and profitability. There were no significant differences in the usage of debt between men and women, and gender was not a significant predictor of financial leverage.

Introduction

Small businesses in the United States are widely recognized as a principal source of economic growth, new jobs, and new products and services. Access to capital is a frequently cited problem, however, and sources of capital are more limited for small firms than for large ones. Traditional capital structure theory as developed by Modigliani & Miller (1958) holds that firms will select the mix of debt and equity that maximizes the value of the firm and minimizes its weighted average cost of capital. This theory may not hold for small privately-held firms because it is based on the assumption that there are no transaction costs of any kind and that investors and managers have the same information about the firm. In fact, the cost of issuing public debt or equity is prohibitive for small firms, and informational asymmetries abound. Thus, unlike larger, particularly publicly-held companies, small firms typically do not have the option of issuing stocks or bonds.

Owing to their inability to access the public debt and equity markets, small businesses tend to be heavily reliant on commercial banks as a source of debt financing (Cole & Wolken, 1995, 1996; Petersen & Rajan, 1994; Scherr et al., 1993). Some prior research has suggested, however, that women-owned businesses experience greater difficulties in borrowing than businesses owned by men (Brush, 1992; Buttner & Rosen, 1988; Colter & Aubry, 1990; Riding & Swift, 1990). This study compares use of financial leverage by men and women-owned small businesses to determine if women are less likely to use debt as a source of financing.

Capital Structure and the Small Business

Modigliani & Miller's (1958) theory of capital structure states that firms will select the mix of debt and equity that minimizes their weighted average cost of capital. Because interest expense is tax deductible, debt is less costly than equity as a source of capital. Therefore, firms, in principle, act to minimize the cost of capital and maximize the value of

the firm by financing with debt. Other researchers 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 stating that firms use internally generated funds in the form of retained earnings before turning to external sources. When retained earnings are exhausted, firms will first seek out sources of debt and will use more costly external equity only as a last resort.

A number of studies have compared the capital structures of small businesses to those of larger firms to demonstrate small business’ dependence on debt financing. Using the COMPUTSTAT database Titman & Wessels (1988) and Dwyer & Lynn (1989) found that small firms use 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 are confirmed in a subsequent studies by Carter & Van Auken (1990), Osteryoung et al. (1992), and Van Auken et al. (1995).

For many privately-held small businesses, the decision to finance with debt rather than equity may be driven at least as much by necessity as by choice, because small firms do not have the same access to capital that larger public firms do. They are unable to issue publicly-held debt or equity because of their small 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 (Scherr et al., 1993; Petersen & Rajan, 1994; Cole & Wolken, 1995, *Ibid.*, 1996).

Although prior research documents small business reliance on bank debt as a source of financing, access to debt capital is, paradoxically, a frequently cited difficulty for small firms. Small businesses are often relatively new and lack a consistent track record of profitability that would demonstrate the capability to repay a loan. In addition, many small businesses are in service industries and lack assets that could be used as collateral. Asymmetric or incomplete information between the borrower and the lender also represents a potential financing problem for small privately-held firms (Ang, 1992; Berger & Udell, 1995; Ennew & Binks, 1994; Petersen & Rajan, 1994; Weinberg, 1994). In the absence of sufficient information, the typical response of a banker is to deny the loan. As a further consideration, small businesses are more prone to financial distress and failure. Failure rates in excess of 50 percent are commonly cited (Bates & Nucci, 1989; Cochran, 1981). These factors taken together may make small business lending unattractive to banks

Women-Owned Business and Banks

Some research has suggested that women-owned small businesses experience greater difficulties in dealing with banks than men-owned businesses (Brophy, 1989; Brush, 1992; Riding & Swift, 1990; Stoner et al., 1990). Several studies have also noted that women-owned businesses are less likely to use bank loans than those owned by men (Cole & Wolken, 1995; Coleman & Carsky, 1996; Scherr et al., 1993).

At least three different theories have been put forth to explain why women entrepreneurs may use less debt than men. First, some researchers contend that there may be adverse discrimination in the lending process placing women at a disadvantage (Brophy, 1989; Brush, 1992; Neider, 1987; Riding & Swift, 1990; Scherr et al., 1993). According to this view, women are either unfairly denied credit or discouraged in the credit application process with the end result that they are less likely to obtain loans. In addition, women may not network as effectively as men (Aldrich, 1989; Brush, 1992). Thus, they may not have the same access to sources of information and capital.

Others contend that women are more risk averse than men and thus less likely to take on debt (Brown & Segal, 1989; Chaganti, 1986; Colerett & Aubry, 1990; Olsen & Currie, 1992; Scherr et al., 1993). According to this hypothesis, women avoid debt and are reluctant to put up the collateral that may be required to obtain a loan (Carter & Cannon, 1992).

A third theory contends that women-owned businesses use less debt because they don't need it. Women-owned firms tend to be smaller and more heavily concentrated in service lines of business (Chaganti, 1986; Kallenberg & Leicht, 1991; Loscocco & Robinson, 1991). Because they are small, they may be able to finance their needs using the personal financial resources of the business owner. In addition, many service businesses do not have much in the way of assets to be financed because the principal resource is the human capital of the owner; capital requirements for businesses of this type may be relatively modest.

The following section provides an empirical analysis of the extent to which women-owned businesses use debt to determine if there are differences in leverage between men and women-owned firms.

Methodology

Data for this research were taken from the 1993 National Survey of Small Business Finances (NSSBF) conducted by the Federal Reserve Board and the U.S. Small Business Administration. This study included a national sample of 4,637 privately-owned small businesses having fewer than 500 employees. Over four thousand small businesses were interviewed by telephone. Balance sheet and income statement data for 1992 were

collected as well as information on firms' use of financial services and financial service providers.

Differences between women and men-owned businesses included in the sample were examined for statistical significance using the t-test. Prior research indicates that women-owned businesses are smaller and younger than men-owned businesses (Coleman & Carsky, 1996, 1997; Coleman, 1998; Devine, 1994). These characteristics, if they exist, may affect firms' access to capital and terms of credit if financial institutions view smaller companies less favorably.

Regression analysis and t-tests were used to examine the differential extent to which women-owned businesses use debt in their capital structures. It has been suggested that women are less likely to use debt as a source of financing than men (Brown & Segal, 1989; Carter & Cannon, 1992; Chaganti, 1986; Collerett & Aubry, 1990; Olsen & Currie, 1992; Scherr et al., 1993).

The regression model took the form:

$$\begin{aligned} \text{TDTA} = & a + B_1\text{FIRMAGE} + B_2\text{LOGSALES} + B_3\text{ROS} + B_4\text{FEMALE} + B_5\text{PARTNER} \\ & + B_6\text{SCORP} + B_7\text{CORP} + B_8\text{MANUF} + B_9\text{TRANS} + B_{10}\text{TRADE} + \\ & B_{11}\text{FIN} + B_{12}\text{CONSTRUC} + B_{13}\text{MINING} + E \end{aligned}$$

The dependent variable, TDTA, represents the ratio of total debt to total assets. The model was repeated using the ratio of loans to total assets (XLOANS) as the dependent variable. This additional step was added to break out the portion of debt that is raised externally. Independent variables were selected to represent age of the firm, size of the business, gender, organizational status, and industry sector. Independent variables include:

FIRMAGE: number of years the firm has been in existence

LOGSALES: log of 1992 sales

ROS: net income 1992/sales 1992

The following variables were coded as dichotomous variables (0,1):

FEMALE: woman-owned

PROP: sole proprietorship; omitted from model to serve as reference

PARTNER: partnership

SCORP: S-corporation

CORP: corporation

MANUF: manufacturing

TRANS: transportation

CONSTRUC: construction

TRADE: retail or wholesale trade

FIN: financial services

MINING: mining

SERV: business or personal services; omitted from model to serve as reference

Size and age variables (LOGSALES, FIRMAGE) were used because prior research suggests that firms that are larger and more firmly established are more likely to receive loans than small, new companies (Ang, 1992; Cole, 1996; Cole & Wolken, 1995; Coleman, 1998; Ennew & Banks, 1994; Fabowale et al., 1995; Riding et al., 1994; Scherr et al., 1993; Weinberg, 1994). Other research indicates, however, that small firms rely more heavily on debt than larger firms (Carter & Van Auken, 1990; Dwyer & Lynn, 1989; Osteryoung et al., 1992; Titman & Wessels, 1988; Van Auken et al., 1995).

Return on sales (ROS) was included as a variable representing profitability or performance. One would expect more profitable firms to be more attractive to financial institutions as lending prospects. Scherr et al. (1993) found that start-up firms with higher anticipated profitability had higher ratios of debt to equity. Alternatively, however, less profitable firms may have a greater need for external financing because their earnings are not sufficient to fund growth. Titman & Wessels (1988) found that profitable firms were less likely to use debt, and Johnson (1997) also found that leverage was negatively related to firm profitability.

FEMALE was included as a variable to capture gender differences in capital structure. Some researchers has suggested that women-owned businesses are less likely to use debt for a variety of reasons including discrimination (Brophy, 1989; Brush, 1992; Neider, 1987; Riding & Swift, 1990; Scherr et al., 1993) and greater risk aversion (Brown & Segal, 1989; Chaganti, 1986; Collerett & Aubry, 1990; Olsen & Currie, 1992; Scherr et al., 1993). Others contend 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 do not require many assets (Chaganti, 1986; Kallenberg & Leicht, 1991; Loscocco & Robinson, 1991).

Variables representing organization form (PROP, PARTNER, SCORP, CORP) were included to determine if businesses that have adopted the corporate form of organization have an advantage over firms that have not in terms of access to debt. Corporations and S-corporations have the advantage of limited liability which may encourage greater risk-taking and willingness to assume debt. Sole proprietorships and 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 distinction may discourage proprietorships and partnerships from using high levels of debt.

The variables representing SIC codes distinguish between various types of businesses. Prior research indicates that service businesses are less likely to be candidates for bank loans because they often lack assets which can be used as collateral (Hisrich, 1989; Riding et al., 1994). Correspondingly, businesses that are highly capital intensive such as manufacturing, transportation, and construction, may be more likely to use external capital. Bradley et al. (1984) found that industry classification accounted for 25 percent of the variation in firm leverage with capital intensive firms showing significantly higher leverage ratios. Scherr et al. (1993) also found industry effects in a study of the capital structure of start-ups.

A correlation analysis was done to determine that none of the independent variables were highly correlated with each other or with the dependent variables.

Results

Table 1 provides t-test results comparing men and women-owned businesses in the sample.

Table 1
 Characteristics of Men-Owned and Women-Owned Small Businesses

	Men	Women	T stat.	Prob>t
Number	3797	840		
No. of Yrs. in Bus.**	15.84	12.92	5.6511	.0000
No. of Emp.**	34.45	18.45	6.8077	.0000
Annual Rev. 1992**	4,142,599	1,595,991	5.7126	.0000
ROS	0.0736	0.0876	-0.7299	0.4655
TDTA	0.6648	0.6413	0.4550	0.6491
Sole Prop.**	30.31%	40.59%	-5.7920	0.0000
Partnership	7.24%	7.38%	-0.1398	0.8888
S-Corporation	24.28%	21.19%	1.9066	0.0566
Corporation**	38.16%	30.83%	3.9906	0.0001
Manufacturing**	13.12%	9.64%	2.7569	0.0059
Transportation	3.79%	4.40%	-0.8290	0.4071
Construction**	12.61%	5.59%	5.8256	0.0000
Trade	30.52%	33.57%	-1.7271	0.0842
Financial	6.98%	5.60%	1.4489	0.1474
Mining	.63%	.12%	3.3760	0.0660
Service**	32.26%	40.95%	-4.8279	0.0000

*differences between men and women were significant at the .05 level

**differences between men and women were significant at the .01 level

As in the case of prior research, the women-owned businesses in this study were significantly smaller and newer than the businesses owned by men (Coleman & Carsky, 1996; Coleman & Carsky, 1997; Devine, 1994). The women-owned businesses in this study had annual revenues of \$1.6 million compared to \$4.1 million for men-owned businesses. In addition, women-owned businesses operated with approximately half as many employees as men-owned businesses. On average, the women-owned businesses were 12.92 years old compared to 15.84 years for men-owned businesses.

There were no significant differences in profitability as measured by return on sales (ROS). Women-owned businesses were significantly more likely to be sole proprietorships and significantly less likely to be corporations than men-owned businesses however (40.59% vs. 30.31%). In addition, the women-owned businesses were significantly more likely to be in service lines of business (40.95% vs. 32.26%) and significantly less likely to be in either manufacturing or construction.

Tables 2 and 3 provide the results of regression analysis. The first model using the ratio of total debt to total assets (TDTA) as a dependent variable (TABLE 2) reveals that firm size, firm age, and return on sales were all significant and negative indicating that smaller, younger, and less profitable firms are associated with higher leverage. The variables SCORP and CORP were significant and positive indicating that higher leverage is also associated with organizational form with S-corporations and corporations using higher levels of debt than sole proprietorships.

Table 2
Dependent Variable: TDTA

F Value 7.566
 Prob>F 0.0001
 R-Square 0.0209

Variable	Parameter Est.	T for HO	Prob>t
INTERCEPT	0.9515	7.007	0.0001
LOGSALES*	-0.0260	-2.223	0.0263
FIRMGAGE**	-0.0051	-3.363	0.0008
ROS**	-0.1911	-7.281	0.0001
FEMALE	-0.0417	-0.792	0.4282
PARTNER	0.1539	1.846	0.0649
SCORP**	0.2289	3.798	0.0001
CORP**	0.2240	3.964	0.0001
MANUF	-0.0208	-0.305	0.7606
TRANS	0.0369	0.346	0.7294
TRADE	0.0028	0.056	0.9552
FIN	0.0759	0.903	0.3667
CONSTRUC	-0.0257	-0.377	0.7066
MINING	-0.1976	-0.727	0.4671

*significant at .05 level

**significant at .01 level

Table 3
Dependent Variable: XLOANS

F Value 50.662
Prob>F 0.0001
R-Square 0.1574

Variable	Parameter Est.	T for HO	Prob>t
INTERCEPT	1.1069	14.733	0.0001
LOGSALES**	-0.0379	-5.984	0.0001
FIRMAGE**	-0.0026	-3.3259	0.0011
ROS**	-0.4093	-22.394	0.0001
FEMALE	-0.0038	-0.130	0.8962
PARTNER	0.0665	1.448	0.1477
SCORP	0.0597	1.856	0.0636
CORP	0.0191	-0.621	0.5348
MANUF	-0.0685	-1.901	0.0574
TRANS	-0.0234	-0.418	0.6762
TRADE**	-0.0747	-2.747	0.0060
FIN**	0.1243	2.810	0.0050
CONSTRUC	-0.1466	-3.899	0.0001
MINING	-0.1504	-1.082	0.2792

*significant at .05 level

**significant at .01 level

In the regression model using the ratio of loans, mortgages, notes, and bonds to total assets (XLOANS) as the dependent variable (TABLE 3), firm size, firm age, and return on sales were again significant and negative. In addition, TRADE and CONSTRUC were significant and negative while FIN was significant and positive indicating that firms in trade and construction were significantly less likely than service firms to have a high level of external loans while firms in the financial sector were significantly more likely to have high leverage

For both models, firm size (LOGSALES) was significant and negative indicating that smaller firms have higher leverage. This finding is consistent with prior research (Carter & Van Auken, 1990; Dwyer & Lynn, 1989; Osteryoung et al., 1992; Titman & Wessels, 1988; Van Auken et al., 1995). In addition, firm age and profitability were both significant and negative indicating that younger firms and less profitable firms have higher leverage. These findings were also consistent with prior research (Cole & Wolken, 1995; Johnson, 1997; Titman & Wessels, 1988).

Results for organizational form and industry sector were less consistent. It does appear, however, that corporations and S-corporations use higher total leverage than sole proprietorships. In addition, it appears that firms in wholesale and retail trade use less external debt. Gender (FEMALE) was not a significant variable for either model indicating that women were not significantly more or less likely to have higher debt ratios than men. The r-square values for both models were relatively low indicating that the variables that were significant explained a relatively small percentage of firm leverage.

Discussion

The results of this study confirm theories of capital structure put forth in prior research. Timmons (1994) noted that younger growing firms are, at some point, likely to require capital from external sources. Myers (1984) suggested that less profitable firms find it necessary to use external debt, either because they do not have sufficient earnings to fund their growth or because they have exhausted retained earnings. He went on to note that firms finance with external debt first before turning to external equity which is the most costly form of financing. In keeping with this, Titman & Wessels (1988) and Dwyer & Lynn (1989) observed that small firms rely heavily on debt to avoid the transaction costs of issuing equity. Carter & Van Auken (1990) and Van Auken et al. (1995) surmised that smaller firms rely more heavily on debt because they lack access to sources of equity.

In this study, use of leverage was associated with smaller, less profitable firms. Firms of this type may not be as attractive to potential equity investors as suggested by Myers (1984), Carter & Van Auken (1990) and Van Auken et al. (1995). Similarly, leverage was associated with younger firms. Firms in this category may be growing and incapable of generating sufficient internal equity to fund growth (Myers, 1984; Timmons, 1994).

Findings of this study reveal that women were not less likely to use debt than men refuting the results of some prior work as well as anecdotal evidence. Gender was not a significant predictor of leverage in regression models nor were women significantly more or less likely to use debt in t-test comparisons. This suggests that women do have equal access to sources of debt and that they use them. They are not, as has been suggested, more risk averse than men, nor are they victims of discrimination since they appear to have the same access to external loans (Xloans).

A shortcoming of this research is that both regression models had relatively small r-square values indicating that although some independent variables in the model were significant, they did not explain a large amount of the variability in leverage ratios. An opportunity for further research would be to experiment with other ways of specifying the model in an attempt to better pinpoint factors contributing to variability of leverage. A further opportunity would be to explore access to debt capital from various sources such as banks, versus non-bank financial providers, versus other types of providers. It may be

that there are significant differences in access between women and men if providers are segregated by source.

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