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Do Equally Owned Small Businesses Have Equal Access to Credit?

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ABSTRACT. Previous research in small-business financing has generally ignored those businesses owned equally by males and females. The rationale has been that such businesses share the characteristics of both types of owners and would confound any gender-based differences. This paper presents an empirical study in which the credit access experiences of equally owned small businesses are compared to those of their female- and male-owned entrepreneurial counterparts. Various measures of credit constraints are introduced that suggest that equally owned businesses often do experience larger constraints than male-owned businesses and smaller constraints than female-owned businesses, when all credit applicants are considered. However, the results are more mixed in comparisons of successful applicants' constraints. A different approach from that of existing research is then used to study exactly how equally owned small businesses' experiences are unique, rather than merely whether they differ from those of their counterparts. The evidence indicates that different factors are determining the credit application outcomes of all three ownership groups. Where similar determinants are found, equally owned businesses are influenced in a manner more similar to male-owned small businesses. The results show that equally owned small businesses' credit access experience is not equally balanced between those of their counterparts.

KEY WORDS: small business, gender, credit, equal ownership

JEL CLASSIFICATIONS: C810 Micro Data, G200 Financial Institutions and Services, G210 Banking, M130 Entrepreneurship

1. Introduction

This paper explores the differences in credit access that small businesses face, based on the gender of their respective owners. By taking a unique approach, this study offers a more comprehensive understanding of the credit constraints experienced among small business owners. A number of studies of discrimination in small-business financing have examined racial demographic groups (Bates, 1991; Cavalluzzo and Wolken, 2002; Lussier et al., 1998). Others have considered financing outcomes based also on gender (Cavalluzzo and Cavalluzzo, 1998; Cavalluzzo et al., 2002; Jones and Tullous, 2002; Riding and Swift, 1990). Still others have conducted experimental simulations of credit application outcomes (Buttner and Rosen, 1992; Fay and Williams, 1993), assessments by loan officers of entrepreneurs (Buttner and Rosen, 1988), and interviews of borrowers about their perceptions (Orhan, 2001) to examine the potential for gender-based discrimination.

Contrary to the practice of classifying the small-business borrowing population only as female-owned small businesses (FOSB) and male-owned small businesses (MOSB), this paper introduces a third important grouping, classified as equally owned small businesses (EOSB).[1] As many as 3.6 million businesses in the United States, 17% of businesses, are owned equally by men and women.[2] Equal business ownership here refers to ownership interest rather than number of owners or other criteria. Thus, an equally owned business entity means that the total ownership interest owned by the female owners is equal to that owned by the male owners. A FOSB is primarily owned by women, i.e., their ownership interest is greater than 50%, while a MOSB is primarily owned by men, i.e., their ownership interest is greater than 50%. Since ownership is the purchased residual rights of control over a business entity's assets (Grossman and Hart, 1986), how such rights are exercised may depend on who owns the entity. Equally owned businesses are often assumed to be more gender-neutral in terms of their

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decision-making (Mukhtar, 2002) and thus have been ignored in gender-based studies. Ignoring this large contingent of businesses that are each 50% owned by males and 50% owned by females ignores the role that gender may continue to play in their treatment by lenders and thus access to credit, the focus of this study.

An early 1990s review (Brush, 1992) of research on female entrepreneurs suggested opportunities for new methodologies. Still the existing literature is practically void of examining the equally owned small businesses as a focus group.[3] The rarity of studies of this group stems largely from the way gender-based analysis is performed. In studies of access to credit, a binary gender dummy variable tends to be used for testing its statistical significance in pooled regression analysis (e.g., Coleman, 2000, 2002; Robb and Wolken, 2002). No room then is left for discussion of the equal ownership cases. Furthermore, such an approach can only answer whether gender is a significant factor or not in credit access, but cannot explain why and what factors impact female-owned businesses differently from male-owned ones.

The survey data used in this study permits analysis of the three gender-based ownership groups. A comparative analysis of equally owned small businesses with female- and male-owned ones provides insights into understanding the differences between female and male small-business owners. A pooled regression with ownership gender as a categorical dummy variable would only indicate what factors, including gender, are significant to the credit access outcomes of the entire group of small businesses. Such an approach is more useful when comparing small businesses outcomes to those of larger businesses.

Instead, this study highlights differences among small businesses. Separate regression analyses of credit access are conducted for each gender-based ownership group.[4] Any significant results found are compared then across the three ownership groups. Using discriminant analysis, Carter and Rosa (1998) also examine financing differences among small businesses, but do not consider equal ownership cases.

With a focus on racial groups, Blanchflower et al. (1998), among a few studies, do consider the terms of credit obtained by successful borrowers but do not consider credit access difficulties they still face. To offer further insights into the credit access differences among small businesses, this study also addresses difficulties faced by ultimately successful borrowers. Credit access outcomes go beyond incidence of initial credit denial and also include measures of magnitude of credit received. The analysis identifies six different indicators of credit constraints and analyzes how each of the three gender-based ownership groups has fared.

Univariate analyses indicate that FOSB generally face greater credit access difficulties than EOSB and MOSB. In turn, EOSB face greater difficulties than MOSB. However, the univariate results are somewhat different for ultimately successful borrowers. Multivariate analyses indicate that EOSB credit access outcomes are influenced by factors similar to those influencing MOSB than those affecting FOSB.

The following section discusses the nature of the survey data and variable derivation. Section 3 presents the methodology used to examine the credit constraint indicators presented. Comprehensive empirical results are reported in tables, followed by analytical discussion. Section 4 concludes with suggestions for future research.

2. Data and variables

A cross-sectional sample of small businesses in the United States is used. The initial data set of 3642 businesses was collected by the National Federation of Independent Business (NFIB), the nation's largest small-business organization, from its 1995 survey of 18,000 random businesses out of more than 600,000 members. Dunkelberg and Scott (1983) discuss the membership's relative representativeness of small businesses nationwide.

This 1995 survey data is among the most recent publicly available data from the NFIB's periodic surveys of its members' financing experiences. The survey datasets are comparable in sample size and nature to those from the Federal Reserve's periodic Survey of Small Business Finances (SSBF).[5]

Despite greater coverage of types of funding sources and characteristics of small-business owners beyond gender and race, the SSBF

survey data is less comprehensive than the NFIB data in terms of the borrowers' perspectives about the lending relationship and the credit access outcomes for small-business borrowers, which is the focus of this paper. In addition, while the SSBF survey data is available for the years 1993 and 1998, the NFIB data is collected for 1995, the mid-interval year of the two Federal Reserve surveys. Thus, the NFIB dataset is an important complement to the SSBF datasets.

More specifically, the NFIB-sponsored *1995 Credit, Banks and Small Business Survey* questions cover characteristics of the individual small business, its borrowing choices and experiences, its relationships with its primary financial institutions, characteristics of the individual financial institution, and competition among lenders.

Businesses with more than 499 employees, being large-sized according to the official small-business research definition, were excluded, as were those that did not identify ownership gender. The resulting sample of 3567 small businesses was the maximum usable sample size.

To examine credit constraints faced by the different ownership groups of small businesses, both dependent and independent variables are derived from the survey data, except two exogenous variables that are constructed by the author. First, six credit constraint indicators are specified. These dependent variables cover incidence of credit access outcomes (credit denial, number of tries, having a line of credit, and ability to always satisfy borrowing needs) and, for successful outcomes, the magnitude of credit access (credit shortage ratio, maximum line of credit).

A set of explanatory variables are directly derived from credit denial reasons given in the survey data. These explanatory variables are subgrouped under the following headings: (a) profile and credit history of the borrower, (b) indicators of the borrower's business success, (c) business cycle conditions, and (d) financial condition of the lender, as noted in Table VII.

Two explanatory variables normally treated by studies as dummy variables are converted into scale variables to more precisely measure their impact on businesses' credit constraints. These two business cycle condition variables were constructed from other than the survey data. The first variable is a location variable reflecting the economic conditions in a business' particular locality (Gartner and Bhat, 2000). A string variable that indicated a business' location by state was transformed to a scale variable that represents a state growth index. The index value for each state reflects a ratio of the average growth rate of the state's Gross State Product (GSP) to the national GSP average growth rate over the 1993–1995 period. Thus, a more precise assessment of business location's effect on the business' ability to access credit may then be obtained.

A second variable reflecting industry conditions was then constructed. The two-digit SIC (Standard Industrial Classification) codes for each business were recoded to construct a scale variable that represents an industry growth index. The index value for each corresponding industry reflects a ratio of the average growth rate of the industry in terms of GDP to the national average growth rate of GDP over the 1993–95 period. For both variables, the time period was chosen to be consistent with the 1995 Survey period. Statistics for these and other explanatory variables are presented in Table VIII.

3. Empirical analysis of credit constraint differences among equally owned, female-owned and male-owned small businesses

3.1. *Design of credit constraint tests*

As pointed out by Penrose (1965, p. 219), "Restrictions on the amount of credit a small business can obtain have a more far-reaching effect" on its competition, expansion, and opportunity to put its business plans to the test.[6] The process of getting credit does not end with the initial credit application. An existing business, particularly a growing one, experiences a series of credit-seeking events. To accurately gauge the realistic credit constraints that small businesses go through requires designing tests of credit access at multiple stages: the first stage is the incidence outcome of the credit application, and the second stage is the magnitude of credit access for the successful applicant.

Identified from the survey data are six indicators of credit constraints around which the empirical analysis is organized in this study. Upon application of credit, an applicant receives the lender's credit decision. The first credit constraint indicator is the incidence of applicants who *did not get credit*. A substantial number of initially unsuccessful applicants continue the credit search process through which they continue to be unsuccessful or become ultimately successful. The incidence of difficulties encountered by even the ultimately successful borrowers is measured by the *number of institutions tried, only one or more than one*. If the number of tries increases, applicants are assumed to be having more difficulties in getting credit. Even if successful, business borrowers may not have their credit needs fully met. The *credit shortage ratio* (ratio of credit received to credit requested) gives a magnitude measure of this credit constraint. A smaller ratio, specifically less than one, means that credit difficulties still exist.

For the overall credit access experiences, this study also examines the businesses' past experiences. Borrowers may have encountered possible adverse situations with a line of credit: they (a) *have not had a line of credit from a lender*, an incidence measure of credit constraint, (b) have not been able to draw down the full approved amount, and/or (c) *have a maximum limit on the line of credit*, a magnitude measure of credit constraint for successful borrowers. Data availability permits the analysis of (a) and (c) only. The sixth credit constraint measure is the incidence measure of applicants who *have not always been able to satisfy borrowing needs*.

Table I summarizes the credit constraint indicators, empirical methods, and results tables. Incidence and magnitude measures of credit constraints are used to test the equality of credit access outcomes across the three ownership groups. For each measure multivariate analysis then applies either a logit or an OLS regression to determine which explanatory variables are significant and to what extent such variables are similarly influencing each group. The rightmost column lists the corresponding results tables.

3.2. *Incidence and magnitude measures analysis of credit constraints*

An incidence measure is typically a binary dummy variable that represents whether the business has difficulties in access to credit or not. For instance, statistics for each ownership group's experiences would indicate the average percentage of loan denials. With reasonable assumptions, such a percentage in turn reflects

TABLE I
A summary of the credit constraint tests

Credit constraint indicators (based on credit applicants' experiences)	Outcome timeline	Statistical methods	Results of statistical analysis
1. The extent of applicants who did or did not get credit	RECENT credit application	a. Incidence measure b. Logit regression	a. Table II b. Table IX
2. Number of financial institutions tried by applicants (only one or more)	RECENT credit application	a. Incidence measure b. Logit regression	a. Table III b. Table X
3. Credit shortage ratio (amount credit received/amount requested)	RECENT credit application	a. Magnitude measure b. OLS regression	a. Table IV b. Table XI
4. • The extent of applicants who do or do not have an existing line of credit	PAST credit application	a.•Incidence measure	a. Table V
• Maximum amount to be drawn from existing line of credit		b.•Magnitude measure c. OLS regression	b. Table V c. Table XII
5. The extent of applicants who have or have not always been able to satisfy borrowing needs	Over PAST 3 years	a. Incidence measure b. Logit regression	a. Table VI b. Table XIII

the probability of credit denial for the group's individual members. On the other hand, a magnitude measure is a scale variable which represents what remaining difficulties exist, even for the successful business borrower. For instance, statistics for each group's experiences would indicate the average amount of the loan received relative to the amount of the loan demanded.

In Tables II, III, and IV, the credit constraint experiences during the recent credit application are analyzed, while Tables V and VI reflect past application experiences. The objective of the incidence and magnitude measures analyses is to examine whether experiences in access to credit of the three ownership groups, EOSB, MOSB, and FOSB are statistically similar or not.

Therefore, the null hypotheses tested here are the following:

$$H_0: \mu_E = \mu_M = \mu_F = \mu_P$$
$$H_0a: \mu_E - \mu_M = 0$$
$$H_0b: \mu_E - \mu_F = 0$$
$$H_0c: \mu_M - \mu_F = 0,$$

where μ_E, μ_M, μ_F, μ_P are the mean values for EOSB, MOSB, FOSB and the sample population, respectively. If the hypothesis is rejected, it can be inferred that the tested ownership groups did not have the same credit experiences. With regard to the test statistics, chi-squared tests are conducted as incidence measure tests, along with three-way *F*-tests and pairwise *t*-tests as magnitude measure tests. The analysis also indicates discernable patterns of experiences for EOSB relative to those of the other groups.

Table II reports testing for equality across the three ownership groups in terms of their percentages of businesses which obtained credit or not. To facilitate comparison, the analysis ranks the degree of credit difficulties faced by each group in terms of credit denial proportions as follows:

$$\text{(Test 1)} \quad F >^{***} M > E, \text{ and } F >^{**} E,$$

where $F >^{***} M$ indicates that the female group (FOSB) has greater (>) credit difficulties than the male group (MOSB), with statistical significance at the 0.01 level; M > E indicates that M's credit denial percentage is numerically greater (>) than that for the equally owned group (EOSB), but this difference is statistically insignificant; finally, $F >^{**} E$ shows that F also has greater difficulties than E with a significance level of 0.05. The comparison between FOSB and MOSB is similar to Verheul and Thurik (2001), who also find that for FOSB bank loans

TABLE II
Incidence measure: Whether credit applicants got the credit or not in RECENT credit application cycle

	EOSB	MOSB	FOSB	Tests of equality between groups			
	E	M	F	All	E vs. M	M vs. F	E vs. F
Did NOT get the credit	10.7%	10.9	16.0	$\chi^2 = 7.802$**	0.019	7.344***	5.551**
Did get the credit	89.3%	89.1	84.0	–	–	–	–
Credit source[a]							
Bank	79.0%	84.0	78.8	13.481***	4.587**	11.127***	1.970
Credit union	3.3	1.6	2.6	6.500**	6.362**	1.062	0.470
Finance company	3.6	3.4	2.9	0.444	0.056	0.334	0.438
Other financial institution	2.9	2.0	1.5	2.554	1.669	0.496	1.884
Friend, relative	5.4	4.1	8.1	7.398**	1.738	6.909**	1.514
Other private individual	1.6	1.5	2.9	2.330	0.029	2.306	1.223
Other	4.2	3.4	3.3	0.967	0.813	0.052	0.583

*Significant at the 0.10 level.
**Significant at the 0.05 level.
***Significant at 0.01 level.
[a]Due to rounding, percentages may not sum to 100.0.

TABLE III
Incidence measure: Number of financial institutions from which credit applicants tried to get credit in RECENT credit application cycle

	EOSB	MOSB	FOSB	Tests of equality between groups			
	E	M	F	All	E vs. M	M vs. F	E vs. F
All applicants							
Tried only 1 institution	72.6%	76.4	70.7	$\chi^2 = 12.203$***	5.921**	8.431***	0.755
Tried more than 1	27.4	23.6	29.3	–	–	–	–
Tried more than 2	12.4	10.0	13.9	10.990***	4.279**	8.640***	1.226
Ultimately successful applicants							
Tried only 1 institution	76.8%	80.8	77.4	0.869	0.217	0.776	0.140
Tried more than 1	23.2	19.2	22.6	–	–	–	–
Tried more than 2	9.7	7.8	3.2	5.484*	0.003	5.278**	3.198*
Ultimately unsuccessful applicants							
Tried only 1 institution	40.7%	44.3	39.1	6.385**	5.065**	2.334	0.012
Tried more than 1	59.3	55.7	60.9	–	–	–	–
Tried more than 2	27.1	26.5	41.3	3.157	3.081*	0.340	0.350

*Significant at the 0.10 level.
**Significant at the 0.05 level.
***Significant at 0.01 level.

TABLE IV
Magnitude measure: Magnitude of credit shortage (ratio) faced by credit applicants in RECENT credit application cycle[a]

	EOSB	MOSB	FOSB	Tests of equality between groups			
	E Mean	M Mean	F Mean	All	E vs. M	M vs. F	E vs. F
Overall credit shortage	0.73	0.73	0.68	$F = 2.010$	$t = 0.273$	1.904*	−1.482
	(0.43)	(0.42)	(0.45)		(0.020)	(0.027)	(0.031)
Type of credit							
Fixed term loan shortage	0.74	0.75	0.67	$F = 2.625$*	$t = 0.041$	2.124**	−1.85
	(0.42)	(0.42)	(0.45)		(0.024)	(0.034)	(0.038)
Line of credit shortage	0.64	0.68	0.63	0.394	0.614	0.733	−0.174
	(0.46)	(0.45)	(0.46)		(0.050)	(0.059)	(0.073)
Increase in line shortage	0.82	0.77	0.86	0.979	−0.953	−1.179	0.353
	(0.36)	(0.36)	(0.34)		(0.059)	(0.075)	(0.091)
Overall credit							
Amount requested	$439,042	535,315	127,937	$F = 1.024$	$t = 0.407$	3.532***	−1.467
	(4922547)	(4946902)	(612427)		(236257.0)	(1153337.2)	(212071.2)
Amount received	$365,543	231,477	65,904	$F = 1.147$	$t = -0.629$	3.364***	−1.440
	(4890802)	(2169191)	(175609)		(213303.0)	(49218.6)	(208033.4)

Standard errors (s.e) are in parentheses.
*Significant at the 0.10 level.
**Significant at the 0.05 level.
***Significant at 0.01 level.
[a] Credit shortage ratio = average of (amount of credit received/amount requested) ≠ average amount received/average amount requested

TABLE V
Incidence measure: Whether credit applicants had an existing line of credit or not from PAST application
Magnitude measure: Maximum amount to be drawn from the existing line of credit

	EOSB	MOSB	FOSB	Tests of equality between groups			
	E	M	F	All	E vs. M	M vs. F	E vs. F
Do NOT have credit line	53.5%	47.4	61.4	$\chi^2 = 29.609$***	8.075***	25.614***	6.207**
Have existing credit line	46.5%	52.6	38.6	–	–	–	–
Avg. limit on credit line	$663,805	678,844	688,786	$F = 7.466$***	$t = 1.920$*	3.583***	−2.096**
	(5833269)	(4817933)	(5990911)		(0.095)	(0.140)	(0.152)

Standard errors (s.e.) are in parentheses.
*Significant at the 0.10 level.
**Significant at the 0.05 level.
***Significant at 0.01 level.

TABLE VI
Incidence measure: Whether credit applicants have been able to satisfy borrowing needs or not always over PAST 3 years

	EOSB	MOSB	FOSB	Tests of equality between groups			
	E	M	F	All	E vs. M	M vs. F	E vs. F
NOT always able to borrow	25.2%	24.7	32.2	$\chi^2 = 6.797$**	0.055	6.745**	4.244**
Always able to borrow	74.8%	75.3	67.8	–	–	–	–

*Significant at the 0.10 level.
**Significant at the 0.05 level.
***Significant at 0.01 level.

TABLE VII
Construed explanatory variables

Credit denial reasons given	→	Construed explanatory variables
		Profile and credit history of borrower (W_i)
Too new		Form of business; years owned
Poor repayment record		Purpose of loan for repayment or not; discount for early payment of trade credit; personal banking or not
		Indicators of borrower's business success (X_i)
Outlook for sales not strong		Gross sales (log form); growth of sales
Weak financial condition		Asset size
		Business cycle conditions (Y_i)
Poor industry outlook		Industry relative growth (author's calculation)
Poor geographic location		State relative growth (author's calculation)
		Financial condition of lender (Z_i)
Lender financial problems		Financial institution asset size (log form); institution not bought or absorbed by another; greater competition among institutions

constitute a large proportion of their start-up capital, a finding similar to this study but unlike Coleman (1999). Table II also reports the major sources of credit, according to the proportions of businesses obtaining credit from them.

In a similar fashion, Table III presents the test results based on the number of financial institutions tried by the borrowers. A greater number generally means more difficulty in getting credit. The test result for the percentage of

borrowers who tried only one institution contains informational noise, since the result cannot distinguish between those who obtained credit on the first try (and thus only had to try once) from those who were discouraged by denial from the first institution (and thus only bothered to try once). Emphasis is placed rather on the cases where more than two institutions were tried by the sample of all applicants (Test 2a) and by the pool of only ultimately successful applicants (Test 2b). Credit constraints are again ranked as follows:

$$\text{(Test 2a)} \quad F > E >^{**} M, \text{ and } F >^{***} M,$$
$$\text{(Test 2b)} \quad E > M >^{**} F, \text{ and } E >^{*} F.$$

The interesting result here is that FOSB again appear to experience greater credit constraint difficulties when all applicants are considered, but FOSB appear to experience fewer difficulties when only ultimately successful applicants are considered (Test 2b). Successful FOSB applicants may be the most creditworthy group, while unsuccessful FOSB credit applicants may be the least creditworthy group of all the credit applicants.

Table IV presents the credit shortage test results (Test 3); it appears that this magnitude measure does not differentiate the access to credit experiences of these three groups with much statistical significance. FOSB generally have greater credit difficulties than EOSB, but without statistical significance, while the credit experiences of EOSB and MOSB are statistically generally the same.

$$\text{(Test 3)} \quad F > E = M, \text{ and } F >^{*} M,$$

where E = M means that they are both numerically equivalent and without statistical significance even at the 0.10 level. The table also reports the credit shortage according to the particular type of credit sought. The results support the other credit constraint findings that FOSB again face less difficulty than other ownership groups if already a successful borrower but face greater difficulty as a potential borrower. As successful borrowers with an existing line of credit, FOSB face smaller constraints than both MOSB and EOSB with respect to a requested increase in the line of credit. However, as potential borrowers, FOSB still face larger constraints than both groups with respect to new lines of credit, contrary to Haynes and Haynes (1999), who find improvement in FOSB access to new lines of credit.

Table V reports two test results based on the percentage of credit applicants who have not had a line of credit (Test 4) and the maximum amount of borrowing available for a credit line (Test 5) during the past 3 years. The comparative degree of past difficulties in getting and using credit from a credit line are shown as follows:

$$\text{(Test 4)} \quad F >^{**} E >^{***} M, \text{ and } F >^{***} M.$$
$$\text{(Test 5)} \quad E >^{*} M >^{***} F, \text{ and } E >^{**} F.$$

With respect to a past attempt to obtain a credit line, FOSB faced greater difficulties than the other ownership groups. Again successful FOSB borrowers appear to face smaller difficulties than their EOSB and MOSB counterparts though, in terms of the maximum limit on their existing line of credit.

As the final incidence measures test, Table VI presents the test results on the basis of the percentage of applicants not always able to get credit (Test 6).

$$\text{(Test 6)} \quad F >^{**} E > M, \text{ and } F >^{**} M.$$

This result typifies the order of credit difficulties experiences among these three groups, when the pool of all credit applicants are considered.

In summary, among tests of access to credit among EOSB, MOSB and FOSB, an interesting finding is that the three-way group results are different for successful and unsuccessful credit applicants. FOSB experienced greatest difficulties generally with respect to incidence of credit constraint measures, whereas the focus group of EOSB experienced the greatest difficulties with respect to magnitude of credit constraint measures, for successful borrowers. MOSB experienced the least difficulties overall. In addition, in almost all test cases, the most statistically significant differences in access to

credit experiences are found between MOSB and FOSB.

3.3. *Multivariate analysis of credit constraints*

Regressions are used to determine the relationship between the credit constraint variables and explanatory factors, which are derived primarily from the survey reasons given by small businesses for credit denial. The objective of the multivariate analyses is to identify which explanatory factors are significant and then compare them across the three ownership groups. How the ownership groups are different can be highlighted rather merely recognizing that they are different.

Numerous candidates are possible as explanatory factors for credit constraints faced by small businesses. Scholtens (1999) discusses lenders' means of addressing the asymmetric information posed in providing external financing to small businesses, while Winker (1999) empirically finds that age and improving business conditions relative to other businesses have opposite effects on informational asymmetry and thus the risk of credit rationing. Other evidence suggests that financing constraints may be the result of numerous factors: mode of loan application presentation (Buttner and Rosen, 1989), loan covenants (Apilado and Millington, 1992), financial reporting basis (Coker and Hayes, 1992), cash flow and internal finance (Hubbard et al., 1995), strategies (Van Auken and Holman, 1995), preferences of borrowers (Hamilton and Fox, 1998), size and industry (Lopez-Gracia and Aybar-Arias, 2000), and firm characteristics other than owner characteristics (Coleman and Cohn, 2000). However, this study derives explanatory variables based on explicit survey reasons cited for denial of credit, as shown in Table VII. This approach offers an empirical analysis of applicants' stated reasons for denial rather than researchers' assumed reasons for denial.

These explanatory variables are grouped into four categories: (a) profile and credit history of the borrower, with each factor in this category denoted as (W_i), (b) indicators of borrower's business success (X_i), (c) business cycle conditions (Y_i), and (d) financial condition of the lender (Z_i). Categories (a) and (b) represent the borrower's overall creditworthiness and credit demand conditions. Category (d) represents the lender's credit supply conditions. Finally, category (c) represents external business conditions by industry and by location, both of which shift supply and demand for credit.

Table VIII provides descriptive analysis of the 13 explanatory variables. A large proportion of the explanatory factors are dummy variables. For consistency, all the explanatory factors as listed are assumed to have a favorable impact on access to credit and are coded with a 1, otherwise a 0. Tests of equality across and between groups are also performed, with significant differences among all three groups exhibited for form of business (organization), years of ownership, gross sales, and asset size. The noted differences in characteristics between FOSB and MOSB are similar to those cited in other gender-based studies using different data (e.g., Bitler et al., 2001).

Next, regressions are run separately for EOSB, FOSB, and MOSB to determine which factors are significant in affecting credit constraints for each ownership group. Those factors identified as significant are listed for each ownership group at the bottom of each of the regression tables, Tables IX–XIII. A factor that affects all three groups is listed first for each ownership group. Those affecting two groups are listed next. The rest are listed according to the descending order of their significance level.

Where the credit constraint indicator is an incidence measure and thus represented by a dummy dependent variable (got the loan or not, only 1 financial institution tried or not, able to satisfy borrowing needs over the past 3 years or not), the analysis uses a logit regression model. Where the credit constraint indicator is a magnitude of credit measure and thus represented by a scale dependent variable (magnitude of credit shortage, magnitude of existing credit line), the analysis uses an ordinary least squares regression model. In all cases, the models take the following form:

TABLE VIII
Descriptive statistics of explanatory variables

Explanatory variable (variable coding)	Description	Variable construction	EOSB	MOSB	FOSB	Tests of equality between groups			
			Mean (s.d.)	Mean (s.d.)	Mean (s.d.)	All	E vs. M	M vs. F	E vs. F
Form of business (formbiz)	Whether the business is incorporated	Dummy corporation = 1 otherwise = 0	67.9% 32.1	63.6 36.4	54.5 45.5	$\chi^2 = 19.090$***	4.331**	11.654**	18.962**
Years owned (q6)	Years of ownership	Observations	15.46 yrs (12.82)	16.51 yrs (13.45)	12.65 yrs (12.36)	$F = 14.715$***	$t = 1.851$* s.e. = (0.568)	5.640*** (0.685)	−3.509*** (0.801)
Purpose of loan (purpose)	Whether credit is for capital purposes	Dummy for capital = 1 for refinancing = 0	90.5% 9.5	91.1 8.9	91.0 9.0	$\chi^2 = 2.08$	0.208	0.010	0.046
Discount for early payment of trade credit (earlypay)	Whether the business makes early payments on trade credit for discount	Dummy always or usually = 1 otherwise = 0	73.3% 26.7	72.1 27.9	68.4 31.6	$\chi^2 = 2.297$	0.313	1.683	2.230
Personal banking (personal)	Whether the business owner does personal banking at firm's bank	Dummy yes = 1 no = 0	74.2% 25.8	66.6 33.4	67.7 32.3	$\chi^2 = 14.301$***	14.258***	0.166	5.129**
Log gross sales (lnsales)	(Log of) gross sales last fiscal year	(Log of) observations	\$1.79 m (7313827)	\$2.53 m (8411624)	\$1.44 m (64110166)	$F = 35.400$***	$t = 2.696$*** s.e. = (0.064)	8.136*** (0.093)	−5.465*** (0.107)
Growth of sales (growthre)	Whether growth of sales occurred past three years	Dummy positive growth = 1 otherwise = 0	52.0% 48.0	53.4 46.6	52.8 47.2	$\chi^2 = 0.418$	0.410	0.039	0.067
Asset size (assets)	Whether asset size is large, greater than \$100,000	Dummy greater than \$100,000 = 1 otherwise = 0	75.6% 24.4	71.8 28.2	53.7 46.3	$\chi^2 = 59.429$***	3.889**	48.201***	51.769***
Industry relative growth rate (sicfarm)	Industry GDP growth relative to U.S. GDP growth (average rates1993–95 period)	Ratio corresponds with SIC code observations	1.04 (0.58)	1.02 (0.57)	1.05 (0.90)	$F = 0.505$	$t = -1.491$ s.e. = (0.016)	0.069 (0.020)	−1.131 (0.022)
State relative growth rate (staterev)	State GSP growth relative to U.S. GSP growth (average rates 1993–95 period)	Ratio corresponds with state name observations	1.15 (0.55)	1.10 (0.50)	1.10 (0.52)	F = 2.512*	$t = -2.092$** s.e. = (0.023)	−0.017 (0.027)	−1.391 (0.034)

Financial institution asset size (lnbank)	(Log of) asset size of institution	(Log of) observations	$7.69b ($2.28\times10^{9}$)	$8.96b ($1.32\times10^{9}$)	$7.70b ($2.09\times10^{10}$)	$F=6.396$***	$t=3.268$*** s.e. $=(0.130)$	2.068** (0.152)	0.612 (0.179)
Institution not bought or absorbed by another (consolid)	Whether the financial institution was bought out or absorbed	Dummy no = 1 yes = 0	72.1% 27.9	74.7 25.3	71.4 28.6	$\chi^2=3.099$	1.833	1.832	0.065
Greater competition among institutions (compete)	Whether the business noticed greater competition among financial institutions	Dummy much more or slightly more = 1 otherwise = 0	37.6% 62.4	39.7 60.3	40.7 59.3	$\chi^2=1.207$	0.929	0.127	0.912***

*Significant at the 0.10 level.
**Significant at the 0.05 level.
***Significant at the 0.01 level.

$$\mathrm{CCI} = \beta_0 + \sum \beta_{1\mathrm{i}} W_{\mathrm{i}} + \sum \beta_{2\mathrm{i}} X_{\mathrm{i}} + \sum \beta_{3\mathrm{i}} Y_{\mathrm{i}} + \sum \beta_{4\mathrm{i}} Z_{\mathrm{i}} + \varepsilon,$$

where CCI is the dependent variable (credit constraint indicator).

Table IX reports the estimated logit regression results for the first credit constraint, incidence of credit denial. For the credit constraint dependent dummy variable D_{i}, the favorable outcome (got the credit) is coded as $D_{\mathrm{i}} = 1$, otherwise as $D_{\mathrm{i}} = 0$. Four demand-side category factors are importantly correlated with the credit constraint measure, while two supply-side category factors are found to be important. The external business environment factors in terms of business cycle conditions are not found to be significant. The MOSB group is sensitive to the largest number of explanatory variables, and gross sales size particularly influences credit access favorably. Meanwhile, the EOSB group benefits from increased competition among financial institutions, and the FOSB group is adversely affected by requesting credit for capital rather than for repayment purposes.

In Table X, the credit constraint dependent dummy variable D_{i} is whether the borrower tried only one institution ($D_{\mathrm{i}} = 1$) or more ($D_{\mathrm{i}} = 0$). Six demand-side category factors are significant, while two supply-side variables are also significant in the logit regression. In addition, the two external business environment variables, state and industry relative growth ratios, prove to be significant. The FOSB group is sensitive to the largest number of explanatory variables, such as state and industry growth, growth of sales, and asset size. Their negative regression coefficients imply that when these variables create greater credit needs, FOSB owners must try more than one institution to get credit. For MOSB, the credit supply side conditions instead are very significant and indicate that larger banks do not improve the small businesses' access to credit. EOSB are least affected by the specified variables.

Table XI provides OLS regression estimation results, with the credit shortage ratio as the credit constraint dependent variable. With this

TABLE IX
Logit regressions of credit access in RECENT credit application (dependent variable: did get the credit = 1, did not = 0)

	EOSB	MOSB	FOSB
Explanatory variables			
Constant	2.822 (2.255)	0.740 (1.135)	5.211 (2.857)*
Profile and credit history of borrower			
Form of business (incorporated or not)	0.612 (0.639)	0.415 (0.290)	−0.857 (0.615)
Years owned	−0.006 (0.019)	0.002 (0.010)	−0.015 (0.019)
Purpose of loan (for repayment or not)	−0.376 (0.624)	−0.347 (0.397)	−1.233 (0.745)*
Discount for early payment of trade credit	0.091 (0.517)	−0.653 (0.255)**	−0.143 (0.580)
Personal banking or not	−0.152 (0.518)	−0.372 (0.254)	0.396 (0.593)
Indicators of borrower's business success			
Log gross sales	0.149 (0.220)	0.287 (0.100)***	−0.070 (0.212)
Growth of sales (positive or not)	−0.374 (0.501)	−0.031 (0.260)	−0.602 (0.539)
Asset size (large or not)	−0.783 (0.563)	−0.509 (0.282)*	−0.631 (0.619)
Business cycle conditions			
Industry relative growth	−0.242 (0.390)	0.268 (0.213)	−0.156 (0.512)
State relative growth	0.243 (0.442)	0.232 (0.263)	0.181 (0.537)
Financial condition of lender			
Log financial institution asset size	−0.141 (0.115)	−0.101 (0.057)*	−0.140 (0.130)
Institution not bought or absorbed by another	0.200 (0.537)	0.071 (0.277)	−0.157 (0.585)
Greater competition among institutions	1.041 (0.475)**	−0.022 (0.262)	−0.078 (0.573)
N	208	794	120
Log likelihood	134.360	467.642	99.741
R^2	0.048	0.041	0.092
χ^2	10.291	33.485***	11.553

Standard errors (s.e.) are in parentheses.
*Significant at the 0.10 level.
**Significant at the 0.05 level.
***Significant at 0.01 level.
Significant factors influencing whether getting the credit or not:
For E: greater competition among FIs
For M: gross sales, early payment, asset size, FI size
For F: purpose of loan; constant

magnitude dependent variable, the chosen explanatory variables surprisingly turn out to be less powerful for all three groups, particularly for FOSB and EOSB. Here, the borrower's credit history is most significant for MOSB. A better credit history does improve their magnitude of credit received relative to the amount demanded.

Similarly, Table XII presents OLS regression results, with the credit constraint dependent variable represented by the maximum amount of credit available on a credit line. Both MOSB and EOSB are more sensitive than FOSB to the explanatory variables, particularly to the borrower-side variables. The length of ownership, amount of sales, and the business' asset size do appear to increase the limit on the credit line.

Table XIII reports statistical results of the logit regression, with the credit constraint dummy dependent variable being the extent of applicants who have been always able to satisfy their borrowing needs ($D_i = 1$) or not ($D_i = 0$). Here both FOSB and MOSB are impacted by the same number of demand-side variables. However, the significant variables for FOSB are the profile and credit history category variables, while those for MOSB are spread over the applicant's profile and credit history and business success category variables, with length of business ownership particularly improving the probability of consistent credit availability. Sales growth and financial institution size do not increase the probability of satisfying borrowing needs. Sales growth may be the result of a new

TABLE X
Logit regressions of credit access in RECENT credit application (dependent variable: only 1 financial institution tried = 1, tried more than one = 0)

	EOSB	MOSB	FOSB
Explanatory variables			
Constant	−0.722 (1.526)	3.113 (0.808)***	6.604 (3.070)**
Profile and credit history of borrower			
Form of business (incorporated or not)	−0.121 (0.414)	−0.052 (0.206)	−1.167 (0.619)*
Years owned	−0.004 (0.013)	0.012 (0.007)	0.002 (0.020)
Purpose of loan (for repayment or not)	−0.867 (0.459)	−1.378 (0.275)***	−0.722 (0.804)
Discount for early payment of trade credit	0.127 (0.345)	−0.303 (0.186)	−1.214 (0.570)**
Personal banking or not	−0.674 (0.351)*	−0.382 (0.177)**	−0.613 (0.555)
Indicators of borrower's business success			
Log gross sales	0.183 (0.153)	0.021 (0.069)	−0.012 (0.202)
Growth of sales (positive or not)	−0.370 (0.340)	−0.247 (0.179)	−1.694 (0.560)***
Asset size (large or not)	0.024 (0.413)	−0.093 (0.220)	−1.027 (0.589)*
Business cycle conditions			
Industry relative growth	0.373 (0.254)	−0.058 (0.155)	−1.209 (0.559)**
State relative growth	0.470 (0.302)	−0.056 (0.167)	−2.261 (0.624)***
Financial condition of lender			
Log financial institution asset size	−0.019 (0.078)	−0.108 (0.041)***	0.046 (0.136)
Institution not bought or absorbed by another	−0.015 (0.364)	−0.477 (0.184)**	−0.690 (0.570)
Greater competition among institutions	0.165 (0.331)	−0.155 (0.180)	0.193 (0.565)
N	198	745	109
Log likelihood	236.378	816.455	102.391
R^2	0.100	0.068	0.298
χ^2	20.867*	52.302***	38.566***

Standard errors (s.e.) are in parentheses.
*Significant at the 0.10 level.
**Significant at the 0.05 level.
***Significant at 0.01 level.
Significant factors influencing the number of financial institutions tried, only one or more:
For E: personal banking
For M: personal banking, purpose of loan, FI size, FI merger; constant
For F: sales growth, relative growth of state, relative growth of industry, early payment, business form, asset size; constant

business strategy that requires greater credit needs, and a larger financial institution's core lending focus may not be small businesses and thus not satisfy their borrowing needs. The constant variable exhibits statistical significance again. Since the constant represents residual effects, additional gender-based ownership influence that could be embodied in the constant cannot be ruled out.

In summary, multivariate analyses of five credit constraints indicates that a variety of perceived factors affect credit difficulties across the three small-business ownership groups, EOSB, FOSB, and MOSB. This is an important result to understand that different factors affect each group's access to credit. EOSB are slightly more similar to MOSB than to FOSB in terms of the factors affecting their credit access outcomes.

4. Conclusion

This paper examines the effect of small business owner's gender on credit access. By taking a unique approach, this paper provides more comprehensive analyses of credit access for small businesses.

First, contrary to the existing literature primarily dealing with only female- and male-owned businesses, this paper introduces the group of equally owned small businesses. A comparative empirical analysis of the three

TABLE XI
OLS regressions of credit access in RECENT credit application (dependent variable: credit shortage ratio)

	EOSB	MOSB	FOSB
Explanatory variables			
Constant	0.694 (0.294)**	0.560 (0.132)***	1.043 (0.431)**
Profile and credit history of borrower			
Form of business (incorporated or not)	−0.046 (0.080)	−0.008 (0.036)	0.081 (0.101)
Years owned	−0.0001 (0.003)	−0.0005 (0.001)	−0.003 (0.004)
Purpose of loan (for repayment or not)	−0.078 (0.096)	0.113 (0.055)**	0.074 (0.147)
Discount for early payment of trade credit	−0.109 (0.070)	0.057 (0.033)*	−0.047 (0.095)
Personal banking or not	0.001 (0.073)	0.061 (0.031)**	−0.060 (0.093)
Indicators of borrower's business success			
Log gross sales	0.005 (0.028)	0.013 (0.012)	0.021 (0.035)
Growth of sales (positive or not)	0.079 (0.067)	0.035 (0.031)	0.066 (0.099)
Asset size (large or not)	0.066 (0.084)	0.051 (0.039)	0.059 (0.089)
Business cycle conditions			
Industry relative growth	−0.055 (0.050)	0.004 (0.027)	−0.030 (0.083)
State relative growth	0.006 (0.059)	0.012 (0.030)	0.067 (0.092)
Financial condition of lender			
Log financial institution asset size	0.007 (0.016)	−0.011 (0.007)	−0.044 (0.022)**
Institution not bought or absorbed by another	0.027 (0.073)	0.025 (0.033)	−0.006 (0.099)
Greater competition among institutions	0.084 (0.066)	0.003 (0.031)	0.018 (0.093)
N	182	737	113
R^2	0.05	0.029	0.112
Adjusted R^2	−0.022	0.012	−0.004
F statistic	0.699	1.687*	0.963

Standard errors (s.e.) are in parentheses.
*Significant at the 0.10 level.
**Significant at the 0.05 level.
***Significant at 0.01 level.
Significant factors affecting magnitude of credit shortage ratio:
For E: constant
For M: constant; purpose of loan, personal banking, early payment
For F: constant; FI size

ownership groups indicates the more subtle influence of gender on borrower experiences. By also focusing on ultimately successful borrowers, whose credit access experiences span not only the immediate credit application outcome but also the ensuing magnitude of access, this study shows that the initial credit winner is not necessarily a total winner, nor is the initial credit loser necessarily a total loser.

Identified are six different credit constraint indicators around which statistical tests are organized. These constraint indicators are the initial credit approval or denial, the effort of unsuccessful borrowers to be ultimately successful by trying more than one financial institution, the extent of unmet credit needs for even successful borrowers, having a credit line, the maximum amount of the credit line, and consistent availability of credit over a period of time.

Both univariate analysis of incidence and magnitude measures and multivariate analysis provide empirical findings to answer two questions. First, who is most credit constrained? Second, are the three ownership groups' access to credit experiences essentially the same or different? Generally when all applicants are considered in univariate analysis, the FOSB group experiences the most difficulties whereas the MOSB group experiences the least. However, when only successful applicants are considered, the results are different, with FOSB experiencing the least difficulties. The EOSB group experiences more moderate difficulties

TABLE XII
OLS regressions of credit access from PAST credit application (dependent variable: maximum amount to be drawn from credit line)

	EOSB	MOSB	FOSB
Explanatory variables			
Constant	1.208 (0.869)	−0.715 (0.479)	1.024 (1.520)
Profile and credit history of borrower			
Form of business (incorporated or not)	−0.825 (0.274)***	0.229 (0.141)	0.599 (0.463)
Years owned	0.012 (0.008)	0.019 (0.004)***	0.011 (0.015)
Purpose of loan (for repayment?) EXCLUDED			
Discount for early payment of trade credit	0.012 (0.222)	0.276 (0.125)**	0.448 (0.369)
Personal banking or not	−0.348 (0.235)	0.090 (0.118)	0.214 (0.417)
Indicators of borrower's business success			
Log gross sales	0.776 (0.078)***	0.662 (0.042)***	0.519 (0.137)***
Growth of sales (positive or not)	−0.172 (0.216)	0.006 (0.116)	0.417 (0.378)
Asset size (large or not)	0.590 (0.278)**	0.380 (0.153)**	0.589 (0.460)
Business cycle conditions			
Industry relative growth	−0.228 (0.159)	−0.013 (0.099)	0.246 (0.334)
State relative growth	0.152 (0.181)	−0.038 (0.109)	0.441 (0.360)
Financial condition of lender			
Log financial institution asset size	−0.109 (0.053)**	−0.029 (0.026)	0.042 (0.094)
Institution not bought or absorbed by another	−0.134 (0.229)	0.156 (0.126)	0.049 (0.392)
Greater competition among institutions	−0.306 (0.209)	−0.006 (0.114)	0.221 (0.374)
N	118	508	66
R^2	0.581	0.504	0.484
Adjusted R^2	0.533	0.492	0.368
F statistic	12.124***	41.988***	4.148***

Standard errors (s.e.) are in parentheses.
*Significant at the 0.10 level.
**Significant at the 0.05 level.
***Significant at 0.01 level.
Significant factors affecting maximum amount to be drawn from credit line:
For E: gross sales, asset size, business form, FI size
For M: gross sales, asset size, years owned, early payment
For F: gross sales

that oscillate largely within the range of the two other groups, with a slight tilt toward those of MOSB.

Explanatory variables for multivariate analysis are mostly derived directly from the explicit reasons given by small businesses for credit denial. Overall, the estimated coefficients of logit and OLS regression models indicate that variables affecting credit constraint measures are varied for each credit constraint test and for each ownership group. Though credit applicant characteristics do appear to have more influence than lender characteristics, an important finding is that small-business credit experiences are not uniform. However, the EOSB again are affected in a slightly more similar manner as MOSB than FOSB.

Overall, the results indicate that equally owned small businesses are not an equal mixture of their female and male counterparts in terms of their experiences and should be considered in future studies of business credit. Furthermore intragroup differences, such as those between all applicants and ultimately successful applicants, can be used to highlight differences across small-business ownership groups. Thus, female-owned small businesses do not always face greater difficulties than male-owned small businesses in their access to credit. Similar patterns of differences in credit

TABLE XIII
Logit regressions of credit access over PAST 3 years (dependent variable: always able to satisfy borrowing needs = 1, not always able to do so = 0)

	EOSB	MOSB	FOSB
Explanatory variables			
Constant	5.539 (2.008)***	1.589 (0.834)*	8.278 (3.286)**
Profile and credit history of borrower			
Form of business (incorporated or not)	0.082 (0.501)	0.495 (0.222)**	−1.286 (0.691)*
Years owned	0.009 (0.018)	0.018 (0.008)**	0.063 (0.035)*
Purpose of loan (for repayment or not)	−0.848 (0.527)	−0.330 (0.317)	−2.314 (1.009)**
Discount for early payment of trade credit	−0.766 (0.410)*	−0.733 (0.193)***	−1.163 (0.565)**
Personal banking or not	−0.581 (0.427)	0.003 (0.193)	−1.153 (0.578)**
Indicators of borrower's business success			
Log gross sales	0.122 (0.169)	0.163 (0.075)**	−0.138 (0.217)
Growth of sales (positive or not)	−1.000 (0.438)**	−0.400 (0.190)**	−0.704 (0.542)
Asset size (large or not)	0.092 (0.514)	−0.222 (0.227)	−0.935 (0.607)
Business cycle conditions			
Industry relative growth	−0.254 (0.324)	0.053 (0.163)	−0.403 (0.540)
State relative growth	0.117 (0.368)	0.003 (0.180)	0.179 (0.607)
Financial condition of lender			
Log financial institution asset size	−0.287 (0.102)***	−0.100 (0.043)**	−0.428 (0.156)***
Institution not bought or absorbed by another	−0.451 (0.430)	−0.360 (0.197)*	−0.259 (0.622)
Greater competition among institutions	−0.234 (0.415)	−0.092 (0.195)	1.518 (0.596)**
N	174	675	104
Log likelihood	168.930	721.223	94.064
R^2	0.148	0.073	0.328
χ^2	27.854***	51.356***	41.333***

Standard errors (s.e.) are in parentheses.
*Significant at the 0.10 level.
**Significant at the 0.05 level.
***Significant at 0.01 level.
Significant factors affecting ability to satisfy borrowing needs always or not:
For E: FI size, early payment, sales growth; constant.
For M: FI size, early payment, sales growth, business form, years owned, gross sales, FI merger; constant.
For F: FI size, early payment, business form, years owned, competition among FIs, purpose of loan, personal banking; constant.

access may emerge when conducting studies with data from other countries.

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Notes

[1] Gender-based studies of small-business ownership often do not define what is meant by female-owned or male-owned businesses, since it is presumed that if females own more than 50%, it is primarily a female-owned business; likewise, if males own more than 50%, it is primarily a male-owned business, according to U.S. government convention. Where ownership gender is explicitly defined, ownership is typically assigned according to survey responses by gender of the head of households who are self-employed, by membership in a women's business group, or by primary decision-making. These survey approaches thus often ignore small businesses that are incorporated and equally owned businesses, including those that can be considered sole proprietorships.

For a sole proprietorship, which is an unincorporated business entity, there is only one owner, either female or male. However, in community property states, a business entity wholly owned by a husband and wife can be classified either as a partnership or as a sole proprietorship (U.S. Internal Revenue Service, 2004, p. 2). If classified as the latter form, such a sole proprietorship is then an equally owned entity. A partnership is an unincorporated business entity with two or more members. Each member's

capital interest (business ownership interest) may or may not be equal. If the total capital interest of female members is equal to that of male members, the partnership is equally owned. Unless every member has the same share of interest, the equally owned partnership does not necessarily result in an equal number of female and male members. Lastly, as incorporated business organizations, both S and C corporations are owned by shareholders according to their stock interest. Thus, in an equally owned entity, 50% of shares each are owned between female and male shareholders. The difference between S and C corporations is their tax status. An S corporation is a standard business corporation (C corporation), in which every shareholder has elected to be taxed under Subchapter S of Internal Revenue Code on the same basis as a sole proprietor or partner. If everyone does not elect, the company pays tax under Subchapter C, resulting in double taxation.

[2] U.S. Small Business Administration Office of Advocacy (2001, p. 9).

[3] One exception is the study by Fabowale et al. (1995), in which the equal ownership group is presented in a limited fashion, in univariate testing of borrower satisfaction across groups. The absence of research on the equal ownership group generally also extends outside of the financing arena. One noted exception is a study by Litz and Folker (2002) on the relationship between firm profitability and the management team's gender-balance constitution. Until more recently, the family-owned small-business financing literature concentrated on marital status rather than gender.

[4] In the small-business literature outside of the financing area, more papers study differences within the male and female subgroups themselves, but only some of these conduct multivariate regression analyses.

[5] Prior to the 1998 Survey of Small Business Finances (SSBF), the Federal Reserve Board of Governors' periodic surveys were known as the National Survey of Small Business Finances (NSSBF).

[6] Chow and Fung (2000) offer a study that suggests that in China's manufacturing sector, smaller businesses actually face less severe liquidity constraints than larger ones, because of greater privatization among smaller businesses that leads to greater growth, efficiency, and access to informal credit.

References

Apilado, V. P. and J. K. Millington, 1992, 'Restrictive Loan Covenants and Risk Adjustment in Small Business Lending', *Journal of Small Business Management* **30**(1), 38–48.

Bates, T., 1991, 'Commercial Bank Financing of White and Black-Owned Small Business Startups', *Quarterly Review of Economics and Business* **31**(1), 64–80.

Bitler, M. P., A. M. Robb and J. D. Wolken, 2001, 'Financial Services Used by Small Businesses: Evidence from the 1998 Survey of Small Business Finances', *Federal Reserve Bulletin* (April), 183–205.

Blanchflower, D. G., P. B. Levine and D. J. Zimmerman, 1998, 'Discrimination in the Small Business Credit Market', NBER Working Paper No. w6840 (December).

Brush, C. G., 1992, 'Research on Women Business Owners: Past Trends, a New Perspective and Future Directions', *Entrepreneurship Theory and Practice* **16**(4), 5–30.

Buttner, E. H. and B. Rosen, 1988, 'Bank Loan Officers' Perceptions of the Characteristics of Men, Women, and Successful Entrepreneurs', *Journal of Business Venturing* **3**(3), 249–258.

Buttner, E. H. and B. Rosen, 1989, 'Funding New Business Ventures: Are Decision Makers Biased Against Women Entrepreneurs?', *Journal of Business Venturing* **4**(4), 249–261.

Buttner, E. H. and B. Rosen, 1992, 'Rejection in the Loan Application Process: Male and Female Entrepreneurs' Perceptions and Subsequent Intentions', *Journal of Small Business Management* **30**(1), 58–65.

Carter, S. and P. Rosa, 1998, 'The Financing of Male- and Female-Owned Businesses', *Entrepreneurship & Regional Development* **10**(3), 225–241.

Cavalluzzo, K. and L. Cavalluzzo, 1998, 'Market Structure and Discrimination: The Case of Small Businesses', *Journal of Money, Credit, and Banking* **30**(4), 771–792.

Cavalluzzo, K., L. Cavalluzzo and J. D. Wolken, 2002, 'Competition, Small Business Financing, and Discrimination: Evidence From a New Survey', *Journal of Business* **75**(4), 641–679.

Cavalluzzo K. and J. D. Wolken, 2002. 'Small Business Loan Turndowns, Personal Wealth and Discrimination', Federal Reserve Board of Governors *Finance and Economics Discussion Series* 2002–35 (August), 1–32.

Chow, C. K-W. and M. K. Y. Fung, 2000, 'Small Businesses and Liquidity Constraints in Financing Business Investment: Evidence from Shanghai's Manufacturing Sector', *Journal of Business Venturing* **15**(4), 363–383.

Coker, J. W. and R. D. Hayes, 1992, 'Lenders' Perceptions of Income-Tax-Basis Financial Reporting by Small Business', *Journal of Small Business Management* **30**(3), 66–76.

Coleman, S., 1999, 'Sources of Small Business Capital: A Comparison of Men- and Women-Owned Small Businesses', *The Journal of Applied Management and Entrepreneurship* **4**(2), 138–151.

Coleman, S., 2000, 'Access to Capital and Terms of Credit: A Comparison of Men- and Women-Owned Small Businesses', *Journal of Small Business Management* **38**(3), 37–52.

Coleman, S., 2002, 'Constraints Faced by Women Small Business Owners: Evidence from the Data', *Journal of Developmental Entrepreneurship* **7**(2), 151–174.

Coleman, S. and R. Cohn, 2000, 'Small Firms' Use of Financial Leverage: Evidence from the 1993 National Survey of Small Business Finances', *Journal of Business & Entrepreneurship* **12**(3), 81–98.

Dunkelberg, W. C. and J. A. Scott, 1983, *Report on the Representativeness of the National Federation of Independent Business Sample of Small Firms in the United States*, mimeo, Small Business Administration Grant #SBA2A-0084–01.

Fabowale, L., B. Orser and A. Riding, 1995, 'Gender, Structural Factors, and Credit Terms Between Canadian Small

Businesses and Financial Institutions', *Entrepreneurship Theory and Practice* **19**(4), 41–65.

Fay, M. and L. Williams, 1993, 'Gender Bias and the Availability of Business Loans', *Journal of Business Venturing* **8**(4), 363–376.

Gartner, W. B. and S. Bhat, 2000, 'Environmental and Ownership Characteristics of Small Business and Their Impact on Development', *Journal of Small Business Management* **38**(3), 14–26.

Grossman, S. J. and O. D. Hart, 1986, 'The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration', *Journal of Political Economy* **94**(4), 691–719.

Hamilton, R. T. and M. A. Fox, 1998, 'The Financing Preferences of Small Firm Owners', *International Journal of Entrepreneurial Behaviour & Research* **4**(3), 239–257.

Haynes, G. W. and D. C. Haynes, 1999, 'The Debt Structure of Small Businesses Owned by Women in 1987 and 1993', *Journal of Small Business Management* **37**(2), 1–19.

Hubbard, R. G., A. K. Kashyap and T. M. Whited, 1995, 'Internal Finance and Firm Investment', *Journal of Money, Credit, and Banking* **27**(3), 683–701.

Jones, K. and R. Tullous, 2002, 'Behaviors of Pre-Venture Entrepreneurs and Perceptions of Their Financial Needs', *Journal of Small Business Management* **40**(3), 233–249.

Litz, R. A. and C. A. Folker, 2002, 'When He and She Sell Seashells: Exploring the Relationship Between Management Team Gender-Balance and Small Firm Performance', *Journal of Developmental Entrepreneurship* **7**(4), 341–359.

Lopez-Gracia, J. and C. Aybar-Arias, 2000, 'An Empirical Approach to the Financial Behavior of Small and Medium Sized Companies', *Small Business Economics* **14**(1), 55–63.

Lussier, R. N., G. Greenberg and J. Corman, 1998, 'Bank Financing Discrimination Against African-American Owned Small Business', *Journal of Business & Entrepreneurship* **10**(1), 82–93.

Mukhtar, S. M., 2002, 'Differences in Male and Female Management Characteristics: A Study of Owner-Manager Businesses', *Small Business Economics* **18**(4), 289–311.

Orhan, M., 2001, 'Women Business Owners in France: The Issue of Financing Discrimination', *Journal of Small Business Management* **39**(1), 95–102.

Penrose, E., 1965, *The Theory of the Growth of the Firm*, New York: Oxford University Press.

Riding, A. L. and C. S. Swift, 1990, 'Women Business Owners and Terms of Credit: Some Empirical Findings of the Canadian Experience', *Journal of Business Venturing* **5**(5), 327–340.

Robb, A. and J. D. Wolken, 2002, 'Firm, Owner, and Financing Characteristics: Differences between Female- and Male-Owned Small Businesses', Federal Reserve Board of Governors *Finance and Economics Discussion Series* 2002–18 (April).

Scholtens, B., 1999, 'Analytical Issues in External Financing Alternatives for SBEs', *Small Business Economics* **12**(2), 137–148.

U.S. Internal Revenue Service, 2004, *Partnerships*, Publication 541, Washington, D.C.: Government Printing Office.

U.S. Small Business Administration Office of Advocacy, 2001, *Women in Business 2001* Report, Washington, D.C.: U.S. Small Business Administration.

Van Auken, H. E. and T. Holman, 1995, 'Financial Strategies of Small, Public Firms: A Comparative Analysis with Small, Private Firms and Large, Public Firms', *Entrepreneurship Theory and Practice* **20**(1), 29–41.

Verheul, I. and R. Thurik, 2001, 'Start-Up Capital: Does Gender Matter?', *Small Business Economics* **16**(4), 329–345.

Winker, P., 1999, 'Causes and Effects of Financing Constraints at the Firm Level', *Small Business Economics* **12**(2), 169–181.