What Do We Know about the Capital Structure of Privately Held Firms? Evidence from the Surveys of Small Business Finances

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Introduction

This paper seeks to shed light on what factors determine the capital structure at privately held firms. The capital structure decision—a fundamental issue facing financial managers—is, in its simplest form, the selection of a ratio of debt to equity for the firm. This seemingly simple decision about the best mixture of capital sources to be employed in financing the firm's operation and growth has confounded researchers since the seminal "capital structure irrelevance" theory of Modigliani and Miller (1958).

Existing empirical studies that test capital structure theories have relied on data from large corporations that issue complex financial securities for both debt and equity. Unresolved is the question of whether these theories are useful for understanding the capital structure of small privately held firms, which are primarily limited in their external borrowing to financial intermediaries such as banks, finance companies, and other business lending institutions.

Using data from a set of four nationally representative samples of small businesses surveyed for the Federal Reserve Board and the Small Business Administration over a 15-year period, this study contributes to the capital structure literature in at least three important ways.

First, it provides results from the first test of two major competing hypotheses—the pecking-order theory and the trade-off theory—based upon data from small privately held U.S. firms. This previously unaddressed segment of the market provides a new laboratory for reexamining the findings from prior studies that examine publicly traded firms. The focus on private firms eliminates the "noise" introduced by more complicated

securities, such as preferred stock and convertible bonds, reducing the errors-in-variable problems associated with empirical studies of capital structure at larger firms.

Second, the study provides new evidence of the degree of leverage used by small privately held companies and how their use of leverage differs from small publicly traded firms. Samples of data on small privately held firms are compared with data on small publicly traded firms taken from the Compustat database.

Third, the study presents new evidence on how the use of financial institutions influences capital structure, testing whether firms that obtain financial services from a larger pool of financial institutions are able to employ more leverage.

Overall Findings

This study tests predictions from the two competing theories, using descriptive statistics and then more sophisticated multivariate techniques to disentangle various forces influencing the capital structure decision. The results tend to favor the pecking-order theory over the trade-off theory. The analysis reveals that firm size is perhaps the most important determinant of leverage, with firm age also significant. Unprofitable and riskier firms consistently use greater leverage. These findings are consistent with predictions from the pecking-order theory.

Highlights

• The population of small businesses in the United States is not a homogeneous group. From 1987 through 2003, the median ratio of total loans to total assets ranged from a high of 25.1 percent in 1993 to a low of 7.4 percent in 2003,

while the median ratio of total liabilities to total assets ranged from a high of 47.4 percent in 1993 to a low of 27.5 percent in 2003. The distribution of these leverage ratios is heavily skewed by book-value insolvent firms—firms reporting that their liabilities exceeded their assets. This is evident from the mean leverage ratios, which are significantly larger in each year than the corresponding medians.

• Compared with small publicly traded firms, small privately held firms exhibit similar leverage ratios in aggregate, but not by industry—contradicting a key prediction of the trade-off theory, which posits "target leverage ratios" that differ across industrial classifications.

• Firm size is perhaps the most important determinant of leverage. Larger firms consistently use less leverage than smaller firms, whether size is measured by total assets, annual sales, or total employment.

• Firm age also is a significant determinant of leverage. Older firms use significantly less leverage than younger firms. This is consistent with the pecking-order theory but inconsistent with the trade-off theory.

• Profitability influences leverage. Splitting firms into profitable and unprofitable groups reveals that unprofitable firms consistently use greater leverage than profitable firms. This supports the pecking-order theory and goes against the trade-off theory.

• More liquid firms use less leverage, consistent with the notion from the pecking-order theory that financial slack is valuable and enables firms to avoid issuing debt.

• Riskier firms consistently use greater leverage, no matter how risk is measured. This contradicts the trade-off theory but is consistent with the pecking-order theory.

• Firms obtaining financial services from a larger number of bank and nonbank financial institutions employ more leverage.

• Multivariate results indicate no significant differences in capital structure attributable to race, ethnicity, or gender, if other firm characteristics are controlled for. These results are inconsistent with other studies that purport to find evidence of discrimination against minority-owned firms.

Methodology

This study utilized the Federal Reserve's Surveys of Small Business Finances (SSBF) from 1987, 1993, 1998, and 2003. The primary variables of interest are each firm's leverage ratio as measured by total liabilities divided by total assets or by total loans divided by total assets.

Explanatory variables include measures of firm size (annual sales, employment, and assets), profitability (return on assets, profitable/unprofitable), firm age, organizational form and owner demographics. The SSBFs are nationally representative samples of U.S. firms with fewer than 500 employees. In this study, the very small number of public firms in each survey and firms with annual sales over $10 million are excluded.

This study uses both univariate and multivariate techniques to analyze the data. Univariate techniques refer to the presentation and comparison of simple descriptive statistics including the mean and median. Multivariate techniques refer to more sophisticated techniques that account for the complex relations among multiple variables. One such technique is weighted-least-squares regression analysis, which is used to account for the nonrandom sampling designs of the SSBFs.

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Executive Summary

The capital structure decision—how firms decide to finance their fixed assets—is one of the most fundamental issues in corporate finance. Numerous studies have been conducted to test the two major competing theories of capital structure—the pecking-order theory and the trade-off theory. The pecking-order theory suggests that firms opt for funding from sources with the lowest degree of asymmetric information to avoid the increased costs associated with this metric. The trade-off theory suggests that firms seek to balance the tax benefits of debt against the costs of firm distress that rise at an increased rate with the use of leverage.

Yet none of the studies of these theories has analyzed the capital structure decisions of small, privately held firms, which constitute the vast majority of all business enterprises. In this study, we provide the first evidence on this important issue, utilizing data from four nationally representative surveys conducted by the Federal Reserve Board: the 1987, 1993, 1998, and 2003 Surveys of Small Business Finances (SSBF). Among the key findings are the following:

- Firm leverage (the amount of debt used to finance a firm's assets)—as measured by the ratios of total loans to total assets and total liabilities to total assets—is negatively related to firm size, age, profitability, liquidity, and credit quality.

- Firm leverage is positively related to firm tangibility (e.g., physical assets as distinguished from intangible assets such as patents) and limited liability (the liability of a firm's owners for no more capital than they have invested in the business).

- Firm leverage is an increasing function of both the number of banks and the number of nonbank financial institutions with which the firm has business relationships.

- Firm leverage does not vary significantly by the race or ethnicity of the owners.

- There is some evidence that female-owned firms use less leverage.

- In general, these results are broadly supportive of the pecking-order theory and inconsistent with the trade-off theory.

What Do We Know about the Capital Structure of Privately Held Firms?
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1. Introduction

According to many corporate finance textbooks, the capital structure decision is one of the most

fundamental issues facing financial managers.[1] Brealey, Myers, and Marcus (2005, p. 957) label

capital structure "one of the seven most important ideas in finance." This seemingly simple

decision about the best mixture of capital sources to be employed in operating a firm has

confounded researchers since the seminal work of Modigliani and Miller (1958).

Existing empirical studies that test capital structure theories have relied upon data from

large corporations with complex, publicly traded securities (see Frank and Goyal, 2006, for a

recent review). While such large publicly traded corporations own most business assets, they

constitute only a small fraction of the number of business entities. In the United States, for

example, only about 10,000 firms issue publicly traded securities, yet the U.S. Census Bureau

counts approximately 25 million business entities. These privately held firms are vital to the

economy, producing as much as half of all job growth during the past decade. Therefore, a

fundamental and unresolved issue in the finance literature is what factors determine the capital

structure at privately held firms. In this study, we will provide important new evidence on this

issue based upon data from a nationally representative survey of small privately held firms.

In its simplest form, the capital structure decision is the selection by firm management of

a debt-to-equity ratio for the firm.[2] For large publicly traded firms, this decision is complicated

along a number of different dimensions. Should the firm issue public debt or rely solely upon

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[1] See, for example, Ross, Westerfield, and Jaffe (2004) or Brealey and Myers (2003).
[2] Each ratio of debt to equity maps uniquely to a ratio of debt to assets, a ratio of equity to assets and a ratio of assets to equity; however, corporate finance textbooks tend to focus on the ratio of debt to equity when discussing capital structure. In this study, we focus on the ratio of debt to assets, as it does not take on negative values, whereas each of the other ratios is a function of equity, which often is negative for small privately held firms.

private debt? Should the firm borrow in a domestic or foreign currency from a domestic or foreign lender? Should the firm issue debt with or without convertibility features? One way to avoid these complications is to examine small privately held firms whose only capital structure option is whether or not to borrow funds from a commercial bank or other financial intermediary.[3] It is for these firms that the capital structure decision most closely resembles the classic choice of a debt-to-equity ratio that is traditionally taught in the business-school classroom.

This study contributes to the capital structure literature in at least three important ways. First, we provide results from the first test of the two major competing hypotheses about capital structure based upon data from a nationally representative sample of small privately held U.S. businesses.[4] This previously unaddressed segment of the market provides a new laboratory for reexamining the findings from prior studies that examine large publicly traded firms. Our focus on privately held firms enables us to eliminate the "noise" introduced by more complicated securities such as preferred stock and convertible bonds, reducing the errors-in-variable problems associated with empirical studies of capital structure at public firms. Also, as Myers (2000) points out, capital structure "theories are not designed to be general" so that "testing them on a broad, heterogeneous sample of firms can be uninformative." By focusing on privately held firms, we tighten our focus to a more homogeneous sample: smaller firms with concentrated ownership structure that do not issue publicly traded securities.

In general, our results are broadly supportive of the pecking-order theory over the trade-off theory. We find a negative relation between firm leverage and firm size, age, and

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[3] Small firms in the SSBF are those with fewer than 500 employees.
[4] Berger and Udell (1998) discuss the distribution of debt at small U.S. firms based upon 1993 data, but do not analyze determinants of capital structure.

profitability, and a positive relation between firm leverage and firm liquidity, risk, and tangibility of assets.

Second, we provide new evidence on the degree of leverage used by small privately held U.S. companies and how their use of leverage differs from that of small publicly traded firms. We accomplish this by comparing data from our samples of small privately held firms with data on small publicly traded firms taken from the Compustat database. When compared with small publicly traded firms, small privately held firms exhibit similar leverage ratios, but this similarity does not hold up when we disaggregate by industry; this finding contradicts one of the key predictions of the trade-off theory, which posits "target leverage ratios" that differ across industrial classification.

Third, we provide new evidence on how the use of financial institutions influences capital structure. We test whether firms that obtain financial services from a larger pool of financial institutions are able to employ more leverage. We find a positive and significant relation between firm leverage and the number of bank and nonbank financial institutions with which the firm has pre-existing relationships.

In Section 2, we review the literature on empirical tests of capital structure theory. In Section 3, we describe our data. In Section 4, we present our hypotheses and key explanatory variables. In Section 5, we describe our methodology. In Section 6, we present our results, followed by a summary and conclusions in Section 7.

2. Literature Review

Almost 50 years have passed since the seminal work of Modigliani and Miller (1958 and 1963) on the importance of capital structure. Yet the seemingly simple question as to how firms should

best finance their fixed assets remains a contentious issue. The empirical evidence regarding a firm's optimal mixture of financing during this time period is both voluminous and mixed in aggregate.[5] Although there is no consensus, three competing theories—the pecking-order theory (POT), the trade-off theory (TOT), and the market-timing theory (MTT)—have emerged as the finance profession's best explanations for the capital structure decision.

The pecking-order theory (Myers and Majluf, 1984, Myers, 1984) relies upon the concept of asymmetric information between managers and investors, which guides managers in their preference for raising funds. According to this theory, firms opt for funding from sources with the lowest degrees of asymmetric information because the cost of borrowing rises with this metric. Hence, firms opt first for internally generated funds (a form of "inside" equity), then for debt, and, only as a last result, for outside equity. A firm's capital structure is simply the result of previous independent decisions to raise capital; as a consequence, there is no "optimal" ratio of debt to equity under the pecking-order theory..

Under the trade-off theory of capital structure, the firm seeks to balance the tax benefits of using debt (which arise in the United States because interest payments are deductible business expenses while dividend payments are not) against the costs of financial distress that rise at an increasing rate with the use of leverage. Hence, this theory predicts an "optimal" ratio of debt to equity, where the tax benefits of deductible interest are just offset by the costs of financial distress. For public firms, Graham (2000) estimates that the tax benefits of debt are equal to almost 10 percent of a firm's market value. Given this idealized target, each financing decision by the firm is designed to move its capital structure towards this optimal ratio.

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[5] Surveys of studies on capital structure include Bradley, Jarrell, and Kim (1984), Masulis (1988), Harris and Raviv (1991), Miller (1998), Myers (2001), and Frank and Goyal (2006).

The market-timing theory of capital structure is the most recent addition to the mix, emerging from a study by Baker and Wurgler (2002) that considers how the efforts of management to "time" the issuance of equity relate to the firm's capital structure. According to this theory, firms will raise capital by issuing equity in hot equity markets and issuing debt in cold equity markets. The resulting capital structure of a firm is simply a function of when they needed to raise new capital. Those needing capital during hot equity markets will have relatively low ratios of debt to equity, while those needing capital during cold equity markets will have relatively high ratios of debt to equity. As with the POT, there is no "optimal" capital structure predicted by the MTT.

The ability to test whether or not an optimal capital structure exists for firms is complicated. The presence of an optimal mixture of capital can be difficult to isolate because firms operating with a target capital structure in mind will be hampered by adjustment and transaction costs. The continuous pricing of a firm's debt and equity in the marketplace will further complicate the issue. Moreover, firms' ability to adjust to deviations from their desired optimum structure—and their speed in doing so—will also vary. Recent studies by Leary and Roberts (2005), Flannery and Rangan (2006), and Kahan and Titman (2006) bear this out and indicate that the persistence effects documented by the market-timing hypothesis of Baker and Wurgler are minor, and are more likely attributable to adjustment costs as firms seek to rebalance over time towards their targeted "optimal" capital structure.

Recent works by Shyam-Sunders and Myers (1999), Fama and French (2002), and Flannery and Rangan (2006) attempt to distinguish between the POT and TOT. As with so many previous studies on this topic, these researchers find conflicting evidence—some that supports and some that refutes each theory. The inability to differentiate between the two theories beyond

stylized facts is not altogether surprising, however, in light of the results from Graham and Harvey (2001), who conducted a survey of financial executives regarding a number of finance issues. More than 80 percent of the respondents indicated that a "target" ratio or range of ratios guided their decision-making with respect to capital structure—evidence in favor of the TOT. Yet the same survey also found that managers prefer to first use retained earnings for financing new projects and maintain financial flexibility, with a debt reserve for potential future projects—evidence in favor of the POT.

Titman and Wessels (1988) and Graham and Harvey (2001) both indicate that differences in the utilization of debt may exist between large and small firms as a result of transaction costs. Since Booth et al. (2001) and Desai, Foley, and Hines (2004) find evidence of persistent differences in capital structure across countries, we should also expect further noise to be found with larger multinational firms accessing capital in different marketplaces. The novelty of using data from privately held firms to address the capital structure decision is that these firms are devoid of many of the noise-inducing complications that afflict publicly traded firms.

Frank and Goyal (2006) provide a summary of the existing literature on tests of the trade-off and pecking-order theories of capital structure. They report that

> there is a core set of seven reliable factors that are correlated with cross-sectional differences in leverage. Leverage is positively related to median industry leverage, collateral, log of assets, and expected inflation. Leverage is negatively related to market-to-book, profits, and a dummy variable for a firm paying dividends.

To summarize, three major competing theories—the pecking-order, trade-off, and market-timing theories—have emerged as the finance profession's best explanations for the capital structure decision. However, only the first two are relevant for privately held firms that

do not issue publicly traded securities, a fact that, by itself, is strong evidence against the market-timing theory. In the remainder of this paper, we test whether the POT or the TOT better explains the capital structure of privately held U.S. companies.

3. Data

To conduct this study, we utilize data from four independent, cross-sectional surveys of small privately held U.S. firms conducted for the U.S. Federal Reserve Board and the U.S. Small Business Administration: the 1987, 1993, 1998, and 2003 Surveys of Small Business Finances (SSBF).[6] In each survey, the firms surveyed constitute a nationally representative sample of "small businesses" operating in the United States as of year end 1987, 1993, 1998, and 2003, where a "small business" is defined as a nonfinancial, nonfarm enterprise employing fewer than 500 full-time equivalent employees. The survey data are broadly representative of approximately 5 million small firms operating in the United States as of each survey year. In each survey, there are a very small number of firms that indicated they were publicly traded. We exclude these firms so that our samples contain only privately held firms.[7]

The SSBF provides detailed information about each firm's balance sheet and income statement; its credit history and use of financial services and institutions; the firm's characteristics, including standard industrial classification (SIC), organizational form (proprietorship, partnership, LLP, LLC, S corporation or C corporation), and age; and demographic characteristics of each firm's primary owner, including race, ethnicity, and gender. With the exception of the 1987 survey, the SSBFs also provide information on the primary

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[6] See Wolken and Elliehausen (1988), Cole and Wolken (1995), Bitler, Robb, and Wolken (2001) and Mach and Wolken (2006) for detailed descriptions of the 1987, 1993, 1998, and 2003 surveys, respectively.
[7] We exclude 15 (32, 10 and 9) publicly traded firms from the 1987 (1993, 1998, and 2003) SSBFs, respectively, so that we have a clean test of publicly traded versus privately held firms.

owner's age, education, experience, and credit history. Balance-sheet and income-statement data are derived from the enterprise's year-end financial statements. Credit history, firm characteristics, and demographic characteristics of each firm's primary owner are taken as of year end. Each survey variable used in this study is defined in Table 1.

We utilize two alternative measures of capital structure in this study: the ratios of total loans to total assets and total liabilities to total assets. The ratio of total liabilities to total assets maps one to one with the ratio of debt to equity; hence, it corresponds to the traditional measure of leverage that is the focus of most textbook discussions of capital structure. However, total liabilities include current liabilities, which may be viewed as essential to doing business and outside of the manager's capital structure decision. Therefore, we also analyze the ratio of total loans to total assets, which, for our firms, is essentially total liabilities less current liabilities divided by total assets. In practice, both measures are highly correlated in each of the four SSBFs so that the results obtained using each measure are quite similar.[8]

Frank and Goyal (2006) enumerate four major problems faced by empirical researchers doing cross-sectional studies of capital structure: how to define leverage (market versus book), how to treat panel data, how to deal with missing values, and how to deal with outliers. Because we are analyzing privately held firms, we have only book values of debt and equity; market values do not exist for these firms. Also, lacking panel data, we do not have to worry about panel-data issues, such as the lack of independence across observations. With respect to missing values, we are fortunate that the staff of the Federal Reserve Board already has imputed missing

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[8] Welch (2007) critiques three common flaws in empirical capital structure research, one of which is the use of the debt-to-asset ratio as a measure of leverage. He writes "The financial debt-to-asset ratio is flawed as a measure of leverage because the converse of financial debt is not equity. This is because most of the opposite of the financial debt-to-asset ratio is the *nonfinancial liabilities*-to-asset ratio. This problem is easy to remedy—researchers should use a debt-to-capital ratio or a liabilities-to-asset ratio." He goes on to say that flawed measures of leverage may be acceptable if they are highly correlated with correct measures. The correlations of the two leverage measures used in this study are greater than 0.80, which presumably is "high enough."

values; we rely upon their expert and well documented efforts. With respect to outliers, we have chosen to winsorize problematic variables, which include each of our financial ratios. This involves replacing values outside of some percentile (typically, the 95th or 99th) with the value at that percentile.

We also utilize annual financial data on publicly traded firms from Compustat, extracting data from 1987, 1993, 1998, and 2003.[9] For comparison purposes, we calculate median leverage ratios in each year. For purposes of testing the TOT, we calculate median leverage ratios by year and by one- and two-digit standard industrial classifications, which we use as proxies for "target leverage ratios" predicted by the TOT.

4. Hypotheses and Key Explanatory Variables

According to the TOT, a firm balances the benefits from the tax deductibility of interest, which are substantial,[10] against the costs of financial distress. The firm takes on additional debt until the marginal benefit of the tax shield provided by the deductibility of interest expense is equal to the marginal costs imposed by the increased probability of financial distress that accompanies higher leverage. The TOT leads to several testable hypotheses. Factors associated with higher probabilities of financial distress should be associated with lower leverage. Factors associated with greater tax benefits from the deductibility of interest expense should be associated with higher leverage.

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[9] We select all active firms in each year with total assets (DATA6) greater than zero and employment (DATA29) greater than zero. For consistency with the SSBF, we delete firms in two-digit SIC codes less than 10, in codes 43, 60, 61, 62, 63, 67, and 86 and in codes greater than 89. (These firms were excluded from the SSBF.) We calculate the ratio of liabilities to assets as total liabilities (DATA181) divided by total assets (DATA6). We calculate the ratio of loans to assets as the sum of long-term debt (DATA9) and short-term debt (DATA34) divided by total assets (DATA6). We calculate the ratio of tangible assets to total assets as gross property, plant, and equipment (DATA7) divided by total assets (DATA6).

[10] Graham (2000) estimates that tax benefits of debt are worth approximately 10 percent of the market value of a firm.

According to the POT, asymmetric information leads the firm to a "pecking order" in its search for funding; the firm first uses internally generated funds (primarily retained earnings), then taps private debt (primarily in the form of loans from financial institutions), and seeks equity from outside sources only as a last resort.[11] For small privately held firms, outside equity is rarely available, so the fundamental choice is between insiders' equity and private debt.[12] The POT also leads to several testable hypotheses. Financial slack can be used to fund projects when external equity is unavailable or prohibitively expensive, so a firm with more financial slack should use less leverage. Tangible assets can be used as loan collateral, so a firm with more tangible assets should use more leverage. To the extent that tangible assets are measured with error but also correlated with industry classification, a firm in an industry with a higher portion of tangible assets should use more leverage. More profitable firms generate more internal funds, so a more profitable firm should use less leverage.

In the following discussion, we limit our focus to privately held small firms that choose their capital structure primarily by raising funds from insiders' equity or outside private debt (primarily bank loans).

4.1 Firm Size

Firm size influences the probability of financial distress. Larger firms are more diversified and have been shown to have lower probabilities of default. Therefore, if the TOT is correct, we should observe a positive relation between firm size and leverage.

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[11] Public firms typically do not use dividend policy to adjust capital structure because dividend cuts are severely punished in equity markets. It is not clear if the "stickiness" of dividends also applies to small privately held firms.
[12] Later versions of the SSBF include a section where firms are queried about their ability to obtain outside equity. In the 2003 SSBF, only 68 of 4,240 firms indicated that they were able to obtain outside equity during the 12 months prior to the survey.

Typically, much more information is available in the marketplace about larger firms than about smaller firms, so informational asymmetries between insiders and outsiders will be less severe at larger firms. Therefore, the POT predicts that larger firms should use proportionately more debt than smaller firms, also implying a positive relation between firm size and leverage.

Measuring the size of privately held firms is problematic. Typically, three alternative variables are used in the finance and entrepreneurship literatures to measure the size of such firms: total assets, annual sales revenues, and total employment. Total assets is probably the most common measure of firm size, but in our samples this variable presents problems with respect to both missing values and outliers. First, a small portion of the firms did not report total assets to SSBF interviewers, forcing FRB staff to impute these values. Second, many firms that did report total assets reported values that appear inconsistent with other measures of size. This is especially problematic for very small firms in the service industries that have few assets but generate significant sales revenues and employ many workers. Sales revenues present similar but less severe problems. Some firms report zero or very small values of sales revenues.

Total employment presents the fewest problems in both of these respects. All firms reported employment, as this was a sampling criterion, and outliers are uncommon because firm size was limited to 500 or fewer employees. However, the surveys had to deal with how to classify firms reporting zero employees—firms whose owners did all of the work. The early surveys replaced zero values with one-half of an employee, assuming that the owner worked at least part time. The 2003 survey finally recognized that zero-employee firms are not unusual, and that owners are not "employees" as defined by employment law.

Because each of these size measures is imperfect, we test all three measures as proxies for firm size but focus on total assets, as this is the measure most commonly used in the literature and it is highly correlated with the other two measures.

4.2 Firm Age

Younger firms need capital to finance growth. Younger firms also are typically less creditworthy, less profitable, and less diversified than older firms, so they have higher probabilities of financial distress. Therefore, the TOT predicts that younger firms should use less leverage, implying a positive relation between firm age and leverage.

Younger firms' track records are less established than those of older firms, as they have had less time to build a reputation, so informational asymmetry between insiders and outsiders should be more pronounced at younger firms. According to the POT, such firms should prefer internal equity to private debt, implying a positive relation between firm age and leverage. However, younger firms have had less time to generate retained earnings and build up financial slack. According to the POT, such firms should prefer private debt because they do not have access to internally generated funds. Hence, the net prediction of the POT regarding the relation between firm age and leverage is ambiguous.

We include the natural logarithm of firm age to perform this test. We use the log transformation because we expect that a one-year difference in age is more important to the leverage of a young firm than to the leverage of an old firm.

4.3 Profitability

Firm profitability strongly influences the probability of financial distress. The more profitable the firm, the less likely it is to default on its liabilities and the more taxes it can avoid by employing higher leverage. For both reasons, the TOT predicts a positive relation between firm profitability and leverage.

The more profitable the firm, the more internally generated funds will be available. Therefore, the POT predicts a negative relation between firm profitability and leverage. In a study of firms from five developed countries, Wald (1999) finds that profitability is the single most important determinant of leverage, as measured by the ratio of debt to assets.

The SSBFs provide information on the net income of the firm, which enables us to construct the most common measure of profitability—return on assets (ROA), defined as net income divided by total assets. However, SSBF data on profitability are noisy, with a significant portion of the observations requiring imputation. Therefore, as a robustness test, we also construct a zero-one indicator variable for profitable firms, i.e., those firms reporting profits greater than zero. This is a much simpler and cleaner measure of profitability than ROA.

4.4 Liquid Assets

The expected costs of financial distress will be lower for firms with a higher portion of their assets invested in cash and cash-equivalent assets. Therefore, the TOT predicts that leverage will be higher for firms with more liquid assets.

In contrast, the POT posits that firms value "financial slack" in the form of liquid assets. Financial slack enables firms to take advantage of unexpected investment opportunities without having to raise new outside capital from either the debt or equity markets. Therefore, the POT

predicts a negative relation between liquid assets and firm leverage. We measure liquid assets using the ratio of cash and cash equivalents to total assets.

4.5 Tangible Assets

The expected costs of financial distress will be negatively related to the portion of a firm's assets that are tangible, as these assets suffer smaller percentage losses in liquidation and can be pledged as collateral to obtain preferential financing. If the TOT is correct, we should observe a positive relation between the ratio of tangible assets to total assets and firm leverage.

Harris and Raviv (1991) argue that the problem of asymmetric information is smaller when a firm has more tangible assets that can readily be valued. Therefore, the POT also predicts that firms with more tangible assets should be able to utilize more debt, as lenders can look to the tangible assets as collateral without regard to asymmetric information. Thus, firms in industries that typically rely on tangible assets should have higher leverage ratios than firms in industries that rely on intangible assets. Long and Malitz (1985) find that leverage ratios are inversely related to the amount of the firm's intangible assets (proxied for by R&D development). Schwartz and Aronson (1967) provide evidence of strong industry effects in debt ratios.

Researchers typically measure tangible assets using the ratio of fixed assets (plant, property and equipment) to total assets, but some researchers also include inventory in the ratio's numerator. We test both proxies for tangible assets.

As a robustness test, we use Compustat data to calculate the industry median ratio of tangible assets to total assets by two-digit SIC code and use that as a proxy for each SSBF firm's tangible-asset ratio.

4.6 Growth Prospects

The expected costs of financial distress are greater for a firm with better growth opportunities because the value of these opportunities is an intangible asset (although not necessarily a book value), and much of the value of these growth opportunities is lost in financial distress because they cannot be funded and realized. If the TOT is correct, we should observe a negative relation between proxies for growth opportunities and firm leverage.

Growth opportunities are notoriously difficult to value, but especially so by observers outside the firm, so that asymmetric information should be more severe when a firm has more growth opportunities. Hence, the POT also predicts that firms with better growth prospects would rely upon inside equity instead of private debt.

To measure growth opportunities, we rely on a proxy created from information on current and prior-period employment. We construct two dummy variables—one for firms reporting an increase in the number of employees and one for firms reporting a decrease in employment. The omitted category, which typically accounts for a majority of firms, is firms reporting no change in the number of employees. This fact renders the actual change in employment a very noisy measure because of the large mass point at zero. Unfortunately, the 1998 SSBF did not collect information on prior period employment so we cannot perform this test for that survey.

As a robustness test, we also construct proxies for growth opportunities based on current and prior-period sales. The 2003 SSBF did not collect information on the value of prior-period sales, only whether sales revenues had increased, decreased, or remained the same since the prior period. Therefore, we again rely on dummy variables for positive or negative sales growth.

4.7 Creditworthiness

Firms that are more creditworthy have lower probabilities of financial distress. According to the TOT, such firms should use more leverage, so the TOT predicts a positive relationship between measures of credit quality and firm leverage. The POT says nothing about the creditworthiness of the firm, so it makes no predictions regarding the relation between credit quality and leverage.

The SSBFs include several variables that provide information about the creditworthiness of the firm: the number of business delinquencies during the past three years, the number of personal delinquencies of the primary owner during the past three years, whether the firm and/or primary owner has declared bankruptcy within the past seven years, whether any judgments have been rendered against the primary owner during the past three years, whether the firm has ever been denied trade credit, and whether the firm has paid late on its trade credit. However, only one of these variables is available across all four surveys—whether or not the firm has made late payments on its trade credit. Consequently, we use this as our primary measure of credit quality. We use the other variables as measures of robustness.

Each of these survey variables indicates firms of lower credit quality; consequently, we expect that, if the TOT is correct, each of these variables should have a negative relation with measures of leverage. A positive relation would be inconsistent with the TOT but consistent with the POT.

4.8 Industry Leverage

The TOT posits that firms target an "optimal" leverage ratio. According to Frank and Goyal (2004), the industry median leverage ratio is a likely proxy for firms to use as their target. If the

industry median is a good proxy for this target, and the TOT is correct, we should observe a positive relation between the industry median leverage ratio and individual firm leverage ratios.

To the extent that asymmetric information is related to unobservable factors correlated within an industry, as seems likely, the POT at least suggests a positive relation between the industry median leverage ratio and firm leverage.

To perform this test, we calculate median industry leverage ratios using data from Compustat firms with fewer than 500 employees; we then use these industry medians as proxies for the "target" leverage ratios.

Below is a summary of the key predictions regarding the POT and the TOT.

Variables Used to Explain Capital Structure at Privately Held Firms:
Expected Signs Under Alternative Theories

Variable	Pecking-order Theory	Trade-off Theory
Firm Size	+	+
Firm Age	?	+
Profitability	-	+
Liquid Assets	-	+
Tangible Assets	+	+
Growth Prospects	-	-
Creditworthiness	?	+
Industry "Target" Leverage Ratios	?	+

5. Methodology

To provide new evidence on the determinants of capital structure at small firms, we employ both univariate and multivariate techniques. First, we calculate and analyze descriptive statistics (primarily the means and medians) for alternative measures of capital structure by selected firm

and owner characteristics. Second, we estimate a weighted least squares regression model of the form:

$$\text{Leverage} = f \text{ (size, age, profitability, liquidity, tangible assets,}$$
$$\text{growth opportunities, credit quality, control variables)} \qquad (1)$$

For control variables, we include information on the ethnicity, gender, and race of the firm's primary owner. Several studies in the literature (e.g., Blanchflower, Levine, and Zimmerman, 2003, and Cavalluzzo and Cavalluzo, 1998) provide evidence that minority-owned firms are more likely to be denied credit by lenders than nonminority-owned firms. If such firms are consistently denied credit based upon nonfinancial factors, we should observe lower leverage ratios at such firms. We include dummy variables for Asian-, Black-, female-, and Hispanic-controlled firms to test this proposition.

We also include variables that measure the number of financial institutions from which the firm obtains financial services. The relationship literature has established that firms having pre-existing relationships with financial institutions are more likely to be granted credit than other firms (Cole, 1998; Cole, Goldberg, and White, 2004; and Chakravarty and Yilmazer, 2004). Therefore, the more financial institutions with which a firm has relationships, the more credit it should be able to obtain and the higher its leverage ratio should be. However, other researchers hypothesize that lenders want exclusive relationships with their borrowers so that they can extract monopoly rents. If this is the case, then firms with more relationships should be able to obtain less credit than other firms and consequently have lower leverage ratios.

We use two variables to measure the number of financial institutions: the number of commercial banks and the number of financial institutions other than commercial banks from which the firm obtains financial services. Nonbank financial institutions typically are finance companies, leasing companies, or thrift institutions.

6. Results

6.1 Univariate Results

In Tables 2A and 2B, we present descriptive statistics for our analysis variables across each of the four SSBFs. Table 2A shows the medians, while Table 2B shows the means from each of the four SSBFs for each variable. More complete descriptive statistics (number of observations, median, mean, standard error, minimum, and maximum) appear in Appendix Tables A1A-D.

Median leverage varied from a low of 7.5 percent in 2003 to a high of 25.0 percent in 1993 when measured by total loans to total assets, and from a low of 27.5 percent in 2003 to a high of 47.4 percent in 1993 when measured by total liabilities to total assets. It is not surprising that the highest leverage ratios were observed during the "credit crunch" ongoing in 1993.

For comparison, we calculate the median leverage ratios for all Compustat firms and for Compustat firms with fewer than 500 employees (Table 3). These comparisons give us an idea of how similar or different are the leverage ratios of public and privately held companies. For all public firms, the loan-to-asset ratio (shown in Panel A) ranges from 21.1 percent in 1993 and 2003 to 25.5 percent in 1987, and the liabilities-to-asset ratio (shown in Panel B) ranges from 37.9 percent in 1998 to 56.5 percent in 1987. For the small public firms, the loan-to-asset ratios range from 11.3 percent in 2003 to 20.1 percent in 1987, and the liabilities-to-asset ratios range from 43.5 percent in 1998 to 56.5 percent in 2003. Hence it appears that privately held firms

employ a comparable degree of leverage relative to publicly traded firms of similar size when leverage is measured by the ratio of loans to assets, but employ less leverage when leverage is measured by the ratio of total liabilities to total assets. This is quite surprising, as public firms have gained access to new equity from the public markets, so one would expect them to use less leverage than comparable privately held firms.

It is important to note, however, that the median number of employees for these "small" Compustat firms ranges from 99 to 132, while the median number of employees for the SSBF firms ranges from 3 to 4 (Table A1A-D). As this comparison makes clear, even the smallest of publicly traded firms are orders of magnitude larger than the typical privately held small firm.

The median size for the SSBF firms ranges between $58,113 and $99,000 in total assets, between $160,000 and $250,000 in annual sales revenues, and, as previously noted, between 3 and 4 in total employment. In general, firm size declined from 1987 to 1993 and 1998, but rose from 1998 to 2003. In real dollar terms, these declines in assets and sales would be even larger, as these are nominal values.

Median firm age increased from 10 years in 1987 to 12 years in 2003. Profitability, as measured by ROA, varied from 20.71 percent in 1987 to 33.60 percent in 1998. Liquidity, as measured by the ratio of cash to total assets, ranged from 8.47 percent in 1987 to a high of 11.7 percent in 1998. Tangible assets, as measured by the ratio of inventory plus plant, property, and equipment to total assets, ranged from 54.5 percent in 2003 to 70.0 percent in 1993.

For the remainder of the variables, which are zero-one indicator variables, the medians are all zero, with the exception of the numbers of financial institutions from which the firm obtained financial services. The median number of commercial banks was one for each of the

four surveys, while the median number of nonbanks was zero for 1987 and one for the remaining three surveys.

As shown in Table 2B, the averages for firm leverage, size, profitability, and liquidity are much larger than the corresponding medians—evidence of the substantial skewness in these distributions. Average leverage rose in each survey year, from 31.2 percent in 1987 to 61.4 percent in 2003 when measured by total loans to total assets, and from 48.7 percent in 1987 to 84.9 percent in 2003 when measured by total liabilities to total assets. The average size ranged from $425,000 to $568,000 as measured by total assets, from $1.00 million to $1.25 million as measured by annual sales, and from 8.5 to 11.1 as measured by total employment. Average profitability varied from 55.7 percent in 1987 to 87.3 percent in 1998. Average liquidity was between 16.2 percent in 1987 and 24.3 percent in 1998.[13] Average tangible assets ranged from 51.3 percent in 2003 to 65.6 percent in 1993. Credit quality, as measured by the percentage of firms paying late on their trade credit accounts, improved from 1987 to 2003, declining from 42.0 to 24.7 percent of firms.

The average number of commercial banks from which a firm obtained financial services declined from 1.317 in 1987 to 1.246 in 2003, while the number of nonbanks rose from 0.725 to 1.165. The total number of financial institutions used (both bank and nonbank) rose from 2.042 in 1987 to 2.411 in 2003, indicating that the increase in use of nonbanks more than offset the decline in the use of commercial banks.

The period from 1987 to 2003 saw dramatic changes in organizational form, as the percentage of firms organized as C corporations declined from 39.2 to 14.6 percent, while the percentage organized as S corporations rose from 12.4 to 31.4 percent. The percentage of

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[13] In each survey, we winsorize financial ratios to mitigate the effect of large outliers in the data. Both measures of leverage are winsorized at the 95 percent percentiles, while both ROA and the ratio of cash to assets are winsorized at the 99 percent percentiles.

partnerships remained relatively constant at 7 to 9 percent, while the percentage of proprietorships rose slightly from 40 to 44 percent. The 1998 and 2003 surveys also provide information on firms organized as limited-liability corporations: they constituted 0.8 percent of the total in 1998 and 1.4 percent in 2003. (In this table, limited-liability partnerships are aggregated with regular partnerships.)

The distribution of small firms by gender, race, and ethnicity also changed dramatically from 1987 to 2003: female-owned firms increased from 13.8 to 25.8 percent; Asian-owned from 3.0 to 4.5 percent; Black-owned from 2.3 to 3.8 percent; and Hispanic-owned from 2.0 to 4.3 percent.[14]

We also see significant changes in the distribution of firms by industry over the 1987-2003 period. Firms in retail trade (SIC 52-59) and wholesale trade (SIC 50-51) declined from 26.4 to 18.6 percent and from 10.0 to 6.0 percent, respectively, while firms in business services (SIC 70-79) and professional services (SIC 80-89) rose from 18.4 to 24.9 percent, and from 13.2 to 20.7 percent, respectively.

In Tables 4A and 4B, we present median leverage ratios broken out by selected firm and owner characteristics. For the full SSBF samples, median loan-to-asset ratios were 17.7 percent in 1987, 25.1 percent in 1993, 9.2 percent in 1998, and 7.4 percent in 2003 (Table 4A). Panel A of Table 4A breaks down the sample firms by organizational form and shows that proprietorships use far less leverage than do any of the organizational forms that enjoy limited liability. This is not surprising, as proprietors are personally liable for the liabilities of their firms, whereas the owners of corporations and partnerships (except for the general partner) are not. The median proprietorship used no loans in 1998 and 2003, but borrowed 19.6 percent of assets in 1993,

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[14] In this table, owners who are Black and Hispanic are included only in the Black category so that the statistics for Hispanics are biased downwards slightly.

during the height of the 1990s credit crunch. S corporations used the greatest percentage of loans in every year (28.4 percent in 1987, 35.2 percent in 1993, and 25.7 percent in 1998) except for 2003, when C corporations were most highly levered at 26.1 percent. Partnership leverage was comparable to corporate leverage in 1987 and 1993, and fell between corporate leverage and proprietorship leverage in 1998 and 2003.

Panel B of Table 4A breaks down the sample into asset quartiles. In 1987, 1998, and 2003, we see a monotonic relation between size and leverage, with larger firms using more leverage. In each of these years, the median firm in the smallest quartile used no leverage, while the median firm in the largest quartile borrowed loans equal to 20.6 to 27.3 percent of assets. During the credit crunch survey year of 1993, this relation was reversed, with the largest firms using the least leverage and smaller firms using the most leverage.

Panel C of Table 4A breaks survey samples down by firm age: 0-5, 6-10, 11-20, and 21 plus years old. These correspond roughly, but not exactly, to age quartiles. In each survey, we see a negative monotonic relation between firm age and leverage. The oldest firms report the lowest ratios of loans to assets, while the youngest firms report the highest ratios of loans to assets. The one exception was in 1998, when the youngest firms reported less leverage than any group except firms more than 21 years old. As with other breakdowns, leverage ratios are uniformly higher in 1993 than in other years.

Panel D of Table 4A breaks down the samples by race: Asian, Black, White Hispanic, White non-Hispanic, and other. In general, minority-owned firms report lower median leverage ratios than White non-Hispanic firms. Panel E of Table 3A breaks down the samples by gender.

Female-owned firms used less leverage than firms owned by men in each year, but these differences were greatest in 1998 and 2003, when women-owned firms used virtually no loans, while firms owned by men used loans equal to 11 percent of assets.

In Table 4B are the medians for the ratio of total liabilities to total assets. For the full SSBF samples, median liability-to-asset ratios were 39.4 percent in 1987, 47.4 percent in 1993, 34.7 percent in 1998, and 27.5 percent in 2003. The results by organizational form, asset size, firm age, and race, ethnicity, and gender are qualitatively similar to those reported in Table 4A.

6.2 Multivariate Results

Tables 5A and 5B present the results of weighted-least-squares regression analysis where the dependent variable is either the ratio of total loans to total assets (Table 5A) or the ratio of total liabilities to total assets (Table 5B). Each observation is weighted by its survey sampling weight, which is the inverse of its selection probability for that sample. This weighting enables us to use our results to make inferences about the target population, rather than the survey sample.

In Table 5A are the results for leverage as measured by the ratio of total loans to total assets, where the upper tail of the distribution has been winsorized at the 99th percentile. With respect to firm characteristics, the results are remarkably consistent across the four surveys. For many of these variables, the signs are consistent and the coefficients are statistically significant at better than the 0.05 level across each of the four surveys.

Firm size, as measured by the natural logarithm of total assets, is inversely related to firm leverage, and this relation is significant at better than the 0.001 level in each survey. In other words, larger firms use significantly less debt in their capital structure. This result is at odds with what Frank and Goyal (2006, p. 64) cite as one of the "core set of seven factors that are

correlated with cross-sectional differences in leverage." Cross-sectional studies of publicly traded firms find that leverage is "robustly related" to firm size, as measured by the log of assets. This result does not hold for privately held firms. This result also is inconsistent with the TOT, which predicts larger firms should use more leverage than smaller firms. The POT is ambiguous with respect to the effect of firm size on leverage.

Firm age, as measured by the natural logarithm of firm age, also is inversely related to firm leverage. In each of the four surveys, the relation is significant at better than the 0.001 level. Older firms use less debt in their capital structure. This result is inconsistent with the TOT, which predicts that older firms should be more highly levered than their younger counterparts. The POT is ambiguous with respect to the effect of firm age on leverage.

Profitability, as measured by the winsorized return on assets, shows a consistent negative relation with the loan-to-asset ratio. The coefficients for ROA are significant at the 0.05 level for three of the four surveys, with 1998 being the exception. As a robustness test (not shown in Table 5), we replace ROA with a simple zero-one indicator for profitable firms. We find that this variable has a negative and highly significant coefficient in each of the four surveys. These latter findings are strongly supportive of the POT, which predicts that profitable firms use less debt because they can fund projects with retained earnings, but is inconsistent with the TOT, which predicts that profitable firms use more debt to take advantage of the debt tax shield, and because they have lower probability of financial distress.

Liquidity, as measured by the winsorized ratio of cash to total assets, is inversely related to firm leverage in each of the four surveys, and this relation is statistically significant at better than the 0.01 level in each survey, except for 2003, where it is significant at the 0.05 level. The coefficient ranges from -0.199 to -0.347, indicating that a 100 basis-point increase in the ratio of

cash to assets reduces the ratio of debt to assets by 20 to 35 basis points. This result is supportive of the POT, which predicts that firms with more liquid assets have financial slack that can be used in place of new debt to fund unexpected investment opportunities, and is inconsistent with the TOT, which predicts that firms with more liquid assets have a lower probability of financial distress and should use more leverage.

Tangibility, as measured by the ratio of property, plant, and equipment to total assets, is positive across each of the four surveys and is statistically significant at better than the 0.05 level for each survey except 2003. The coefficients range from 0.073 to 0.171, indicating that a 100 basis-point increase in the tangible asset ratio is associated with a 7.3 to 17.1 basis-point increase in the loan-to-asset ratio. According to Frank and Goyal (2006, p. 39), the relation between tangibility and leverage is reliably positive in cross-sectional studies of publicly traded firms. Our results for privately held small firms are broadly consistent with this finding.

Creditworthiness, as measured by trade credit paid late, is positively related to firm leverage. Firms indicating that they made late payments on their trade credit accounts have consistently higher ratios of debt to assets than other firms. The coefficient on this variable is significant at the 0.001 level for three of the four surveys, with 1993 being the exception. The coefficient ranges from 0.008 to 0.268, indicating that the debt-to-asset ratios were 0.8 to 26.8 percentage points higher for such firms. Similar results are obtained for firms reporting that they were delinquent on their business obligation, but this variable is not available from the 1987 survey. In general, these results are inconsistent with the TOT because these firms have higher probabilities of financial distress. Because the POT says nothing about creditworthiness, the results do not contradict the POT.

Target leverage ratios, as proxied by the Compustat median industry leverage ratios, are not significantly different from zero in any of the four surveys (not shown in Table 5). This is inconsistent with the TOT and with evidence from cross-sectional studies of leverage at publicly traded corporations. Frank and Goyal (2006, p. 41) report that median industry leverage is one of the "core set of seven reliable factors that are correlated with cross-sectional differences in leverage."

Moving on to the relationship variables, we find that the debt-to-asset ratio is positively related to the numbers of both commercial banks and nonbanks from which the firm obtains financial services. These results are statistically significant at better than the 0.001 level in each of the four surveys. The coefficients range from 0.049 to 0.216, indicating that a firm could increase its debt-to-asset ratio by 4.9 to 21.6 percentage points by establishing a new relationship with one new financial institution. In general, the results are stronger for relationships with financial institutions other than commercial banks.

With respect to organizational form, the coefficients on both S corporations and C corporations are positive and significant at better than the 0.01 level in each period. These variables show the additional leverage used by corporations relative to the omitted category—proprietorships. The coefficients indicate that corporations have debt-to-asset ratios 3.5 to 48.1 percentage points higher than proprietorships. These results are consistent with the findings regarding organizational form shown in Table 2A. The coefficients on partnerships are positive in each period, and significant in each period except 1993, indicating that partnerships also use more leverage than proprietorships but less than corporations. These findings are consistent with the limited-liability protection offered by the differing organizational forms—none for proprietorships, limited for partnerships, and full for corporations. Results for LLCs are available

only from the 1998 and 2003 surveys. The coefficient is large, positive, and significant in 1998, but slightly negative and insignificant in 2003. These results are attributable to small sample sizes and large variation among LLCs.

Results for race and ethnicity of the firm's primary owner are generally insignificant. Only the 1993 coefficient for Black-owned firms is statistically significant at better than the 0.05 level. By gender, both the 1993 and 2003 coefficients for female-owned firms are negative and significant. The result for 2003 is highly significant with a t-statistic of 5.08 and a coefficient of -0.289, indicating that female-owned firms had loan-to-asset ratios 28.9 percentage points lower than those for male-owned firms. By industry, there are no consistent results, although several individual coefficients are significant in each year.

Table 5B presents weighted-least-squares regression results where leverage is measured by the winsorized ratio of total liabilities to total assets. In general, the results are qualitatively similar to those in Table 5A. This is not surprising, as the correlation coefficients for our two measures of leverage are greater than 0.80 in each of the four surveys. One notable exception is profitability, as measured by winsorized return on assets. The coefficient on ROA is negative and significant in 1987, negative and insignificant in 1993 and 2003, but positive and significant in 1998. However, when we replace ROA with a simple zero-one indicator variable for profitable firms, we find a positive and highly significant relation between profitability and leverage in each of the four surveys. This is supportive of the POT and inconsistent with the TOT.

6.3 Robustness Tests of Multivariate Results

Not shown in the tables are results where we replace the natural logarithm of total assets with the natural logarithm of annual sales revenue and the natural logarithm of total employment. In both

cases, the results are essentially unchanged, although the adjusted R^2 falls by more than half. These results confirm that leverage is inversely related to firm size, even when size is measured by sales or employment rather than assets. They also confirm that results for other variables are independent of our measure of firm size.

We also replace our measure of firm age (natural logarithm of firm age) with a series of zero-one indicator variables for firm ages 0-5, 6-10, 11-20, and 21-plus. In this specification, only the dummy variable for the youngest firms aged zero to five years is statistically significant. The coefficient is positive and in the range of 0.20, indicating that young firms have leverage ratios 20 percentage points higher than older firms.

For each survey, except for 1987, we replace the dummy variable for trade credit paid late with a dummy variable indicating that the firm was at least 60 days delinquent upon a business obligation at some time during the past three years. Like trade credit paid late, this variable for delinquent business obligation is positive and significant at better than the 0.001 level in each period, indicating that firms with lower quality use more leverage.

We include dummy variables indicating whether the firm does business primarily locally, regionally, nationally, or internationally. In 1987, 1993, and 2003, we find that firms doing business primarily nationally or primarily internationally have significantly higher leverage ratios than other businesses. The variables are not significant in the 1998 survey.

We include a dummy variable indicating that the firm's primary owner used her personal credit card(s) for business purposes. In each of the three surveys for which this measure is available, we find that such firms have significantly higher leverage ratios than firms whose primary owner does not use personal credit card(s) for business purposes. (This variable is not available in the 1987 SSBF.)

Finally, we rerun our analyses limiting our sample to corporations (S corporations, C corporations, and LLCs) because our analysis in Tables 4 and 5 indicate highly significant differences in the leverage of proprietorships and corporations. Our results using the ratio of total loans to total assets appear in Table 6, Panel A, and our results using the ratio of total liabilities to total assets appear in Table 6, Panel B. Surprisingly, our results for both measures of leverage are, in general, not qualitatively different from those appearing in Table 5, Panels A and B.

7. Summary and Conclusions

The capital structure decision is one of the most fundamental issues in corporate finance. Numerous studies have been conducted to test the two major competing theories of capital structure—the trade-off theory and the pecking-order theory—yet none of these studies has analyzed the capital structure decisions of privately held U.S. firms, which constitute the vast majority of all U.S. business enterprises. In this study, we provide the first evidence on this important issue, utilizing data from four nationally representative surveys conducted by the Federal Reserve Board: the 1987, 1993, 1998, and 2003 Surveys of Small Business Finances (SSBF).

Our results show that firm leverage, as measured by the ratios of total loans to total assets and total liabilities to total assets, is negatively related to firm size, age, profitability, liquidity, and credit quality, and is positively related to firm tangibility and limited liability. In addition, we find that firm leverage is an increasing function of both the number of banks and the number of nonbank financial institutions with which the firm has business relationships. Finally, we find no significant variations in firm leverage by race or ethnicity, but some evidence that female-

owned firms use less leverage. In general, these results are broadly supportive of the pecking-order theory and inconsistent with the trade-off theory.

Our results contribute to the literature on capital structure and relationship lending in at least four important ways. First, we provide results from the first test of the major competing hypotheses about capital structure based upon data from privately held U.S. firms. Previous research has relied on data from publicly traded corporations, where the capital structure decision is complicated by the wide variety of debt and equity instruments used by large firms. Second, we provide new evidence on the degree of leverage used by small privately held companies and how their use of leverage differs from small publicly traded firms. This is important to any assessment of how economic shocks may affect privately held firms. Third, we provide new evidence on how the use of financial institutions influences capital structure. Fourth, we pool data from four different surveys collected over 15 years that span at least two business cycles, which enables us to provide new evidence on how macroeconomic conditions influence the capital structure decisions of privately held firms.

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Table 1
Definitions of Variables Used to Explain Capital Structure

(Data are taken from the 1987, 1993, 1998, and 2003 Surveys of Small Business Finances)

Variable	
Firm Characteristics	
Leverage Ratio 1	Total loans divided by total assets
Leverage Ratio 2	Total liabilities divided by total assets
Assets	Total assets
Sales	Annual sales revenues
Employment	Total full-time equivalent employment
Firm Age	Age of the firm in years
ROA	Net income divided by total assets
Liquid Assets	Cash divided by total assets
Tangible Assets	Sum of inventory and property, plant and equipment divided by total assets
Growth Prospects	Dummy variables for firms with positive and negative employment growth during previous three years. (No growth is omitted category.)
Firm Delinquent on Business Obligation	Firm has been 60+ days delinquent on a business obligation during previous three years
Trade Credit Paid Late	During the year, the firm has made payments on a trade credit account after the bill was due in full.
Number of Banks	Number of commercial banks from which the firm obtains financial services.
Number of Nonbanks	Number of financial institutions other than commercial banks from which the firm obtains financial services.
Number of Fin'l Institutions	Number of financial institutions including commercial banks from which the firm obtains financial services.
C Corporation	Firm files taxes as a C corporation.
S Corporation	Firm files taxes as an S corporation.
LLC	Firm files taxes as a limited liability corporation.
Partnership	Firm files taxes as a partnership or limited liability partnership.
Proprietorship	Firm files taxes as a proprietor
Owner's Race, Ethnicity and Gender	
Female Owner	At least 51 percent of the firm is owned by a female.
Asian Owner	At least 51 percent of the firm is owned by an Asian.
Black Owner	At least 51 percent of the firm is owned by a Black.
Hispanic Owner	At least 51 percent of the firm is owned by an Hispanic.
Industrial Classification	
SIC 1	Firm is in SIC 10-19: mining and construction
SIC 2	Firm is in SIC 20-29: primary manufacturing
SIC 3	Firm is in SIC 30-39: secondary manufacturing
SIC 4	Firm is in SIC 40-49: transportation, communications and utilities
SIC 51	Firm is in SIC 50-51: wholesale trade
SIC 52	Firm is in SIC 52-59: retail trade
SIC 6	Firm is in SIC 64-67: insurance and real estate (other financial service firms were excluded from the SSBF).
SIC 7	Firm is in SIC 70-79: business services
SIC 8	Firm is in SIC 80-89: professional services

Table 2
Descriptive Statistics for Variables Used to Explain Capital Structure
Panel A: Variable Medians
(Data are taken from the 1987, 1993, 1998, and 2003 Surveys of Small Business Finances)

Variable	1987 Median	1993 Median	1998 Median	2003 Median
Firm Characteristics				
Loans to Assets	0.177	0.251	0.092	0.074
Liabilities to Assets	0.394	0.474	0.347	0.275
Total Assets	99,000	69,435	58,113	72,000
Sales	250,000	190,000	160,000	200,000
Employment	4	3	3	3
Firm Age	10	11	11	12
Retrun on Assets	0.2071	0.213	0.336	0.287
Cash to Total Assets	0.0847	0.108	0.117	0.105
Tangible Assets to Total Assets	0.6667	0.700	0.558	0.545
Employment Growth is Positive	0	0	0	0
Employment Growth in Negative	0	0	0	0
Firm Delinquent on Business Obligation	n/a	0	0	0
Trade Credit Paid Late	0	0	0	0
Number of Banks	1	1	1	1
Number of Nonbanks	0	1	1	1
Number of Fin'l Institutions	2	2	2	2
C Corporation	0	0	0	0
S Corporation	0	0	0	0
LLC	N/A	N/A	0	0
Partnership	0	0	0	0
Proprietorship	0	0	0	0
Owner's Race, Ethnicity and Gender				
Female Owner	0	0	0	0
Asian Owner	0	0	0	0
Black Owner	0	0	0	0
Hispanic Owner	0	0	0	0
Industrial Classification				
SIC 1	0	0	0	0
SIC 2	0	0	0	0
SIC 3	0	0	0	0
SIC 4	0	0	0	0
SIC 51	0	0	0	0
SIC 52	0	0	0	0
SIC 6	0	0	0	0
SIC 7	0	0	0	0
SIC 8	0	0	0	0

Table 2
Descriptive Statistics for Variables Used to Explain Capital Structure
Panel B: Variable Means
(Data are taken from the 1987, 1993, 1998, and 2003 Surveys of Small Business Finances)

	1987	**1993**	**1998**	**2003**
Variable	**Mean**	**Mean**	**Mean**	**Mean**
Firm Characteristics				
Loans to Assets	0.312	0.354	0.399	0.614
Liabilities to Assets	0.487	0.561	0.756	0.849
Total Assets	476,254	488,844	424,989	567,881
Sales	1,251,382	1,001,330	1,005,846	1,098,386
Employment	11.145	8.494	8.715	8.736
Firm Age	13.265	14.284	13.392	14.381
Retrun on Assets	0.557	0.690	0.873	0.749
Cash to Total Assets	0.162	0.197	0.243	0.225
Tangible Assets to Total Assets	0.6150	0.656	0.520	0.513
Employment Growth is Positive	0.2421	0.377	n/a	0.154
Employment Growth is Negative	0.1247	0.268	n/a	0.077
Firm Delinquent on Business Obligation	N/A	0.190	0.136	0.159
Trade Credit Paid Late	0.420	0.363	0.270	0.247
Number of Banks	1.317	1.262	1.226	1.246
Number of Nonbanks	0.725	0.844	0.839	1.165
Number of Financial Institutions	2.042	2.106	2.065	2.411
C Corporation	0.392	0.284	0.193	0.146
S Corporation	0.124	0.203	0.243	0.314
LLC	N/A	N/A	0.008	0.014
Partnership	0.081	0.080	0.068	0.086
Proprietorship	0.403	0.432	0.488	0.440
Owner's Race, Ethnicity and Gender				
Female Owner	0.138	0.206	0.238	0.258
Asian Owner	0.030	0.036	0.043	0.045
Black Owner	0.023	0.029	0.040	0.038
Hispanic Owner	0.020	0.043	0.056	0.043
Industrial Classification				
SIC 1	0.131	0.142	0.119	0.116
SIC 2	0.042	0.039	0.038	0.031
SIC 3	0.048	0.042	0.047	0.041
SIC 4	0.029	0.028	0.037	0.039
SIC 51	0.100	0.085	0.072	0.060
SIC 52	0.264	0.217	0.192	0.186
SIC 6	0.068	0.071	0.064	0.070
SIC 7	0.184	0.211	0.246	0.249
SIC 8	0.132	0.166	0.183	0.207

Table 3:
Panel A
Median Ratios of Total Loans to Total Assets by One-Digit Standard Industrial Classification
Compustat vs. SSBF

For each year, the first column presents the median ratio for all Compustat firms, the second column presents the median ratios for Compustat firms with fewer than 500 employees and the third column presents the weighted median ratio for all SSBF firms.

SIC	Industry	2003 Compustat	Compustat < 500 Emp	SSBF	1998 Compustat	Compustat < 500 Emp	SSBF	1993 Compustat	Compustat < 500 Emp	SSBF	1987 Compustat	Compustat < 500 Emp	SSBF
1	Construction	0.234	0.168	0.087	0.276	0.222	0.133	0.192	0.133	0.199	0.215	0.158	0.128
2	Primary Manufacturing	0.214	0.096	0.207	0.208	0.073	0.122	0.166	0.089	0.317	0.216	0.106	0.183
3	Secondary Manufacturing	0.163	0.073	0.108	0.185	0.083	0.161	0.170	0.104	0.225	0.209	0.190	0.233
4	Transportation	0.341	0.296	0.280	0.357	0.315	0.320	0.348	0.341	0.348	0.360	0.342	0.215
5.1	Wholesale Trade	0.239	0.220	0.091	0.256	0.135	0.160	0.277	0.238	0.200	0.286	0.300	0.189
5.2	Retail Trade	0.189	0.203	0.141	0.218	0.224	0.102	0.202	0.227	0.276	0.255	0.217	0.192
6	Financial Services	0.216	0.258	0.060	0.303	0.277	0.209	0.192	0.258	0.366	0.300	0.428	0.293
7	Business Services	0.114	0.073	0.030	0.111	0.069	0.017	0.119	0.064	0.245	0.185	0.194	0.215
8	Professional Services	0.184	0.153	0.00	0.201	0.145	0.027	0.238	0.204	0.243	0.238	0.154	0.082
	All Firms	0.211	0.113	0.075	0.222	0.114	0.092	0.211	0.133	0.250	0.255	0.201	0.177

Panel B
Median Ratios of Total Liabilities to Total Assets by One-Digit Standard Industrial Classification
Compustat vs. SSBF

For each year, the first column presents the median ratio for all Compustat firms, the second column presents the median ratios for Compustat firms with fewer than 500 employees and the third column presents the weighted median ratio for all SSBF firms.

SIC	Industry	2003			1998			1993			1987		
		Compustat	Compustat < 500 Emp	SSBF	Compustat	Compustat < 500 Emp	SSBF	Compustat	Compustat < 500 Emp	SSBF	Compustat	Compustat < 500 Emp	SSBF
1	Construction	0.515	0.461	0.325	0.522	0.450	0.421	0.475	0.357	0.488	0.539	0.414	0.372
2	Primary Manufacturing	0.521	0.341	0.357	0.505	0.302	0.468	0.477	0.297	0.554	0.510	0.347	0.363
3	Secondary Manufacturing	0.469	0.377	0.371	0.463	0.356	0.409	0.465	0.379	0.491	0.491	0.424	0.432
4	Transportation	0.689	0.652	0.363	0.661	0.649	0.619	0.648	0.624	0.622	0.625	0.603	0.313
5.1	Wholesale Trade	0.608	0.598	0.416	0.556	0.469	0.450	0.610	0.612	0.531	0.590	0.514	0.489
5.2	Retail Trade	0.503	0.566	0.343	0.520	0.514	0.357	0.480	0.452	0.458	0.549	0.491	0.410
6	Financial Services	0.635	0.640	0.240	0.625	0.621	0.378	0.578	0.579	0.500	0.625	0.641	0.517
7	Business Services	0.529	0.534	0.200	0.486	0.436	0.246	0.471	0.454	0.463	0.498	0.471	0.430
8	Professional Services	0.555	0.542	0.185	0.557	0.555	0.238	0.527	0.399	0.430	0.571	0.461	0.208
	All Firms	0.447	0.565	0.275	0.379	0.435	0.347	0.538	0.484	0.474	0.565	0.476	0.394

Table 4
Median Capital Structure Ratios by Selected Firm and Owner Characteristics
Panel A: Capital Structure as Measured by the Ratio of Total Loans to Total Assets
(Data are taken from the 1987, 1993, 1998, and 2003 Surveys of Small Business Finances)

Variable	1987 Obs	SSBF Median	1993 Obs	SSBF Median	1998 Obs	SSBF Median	2003 Obs	SSBF Median
All Firms	3,224	0.177	4,637	0.251	3,485	0.092	4,163	0.074
Organizational Form								
Proprietorship	1,195	0.051	1,492	0.196	1,375	0.000	1,298	0.000
Partnership or LLP	255	0.245	337	0.259	218	0.182	337	0.141
S Corporation	449	0.284	1,100	0.352	1,013	0.257	1,532	0.237
C Corporation	1,325	0.236	1,708	0.254	851	0.231	941	0.261
LLC		N/A		N/A	28	0.538	55	0.169
Asset Quartile								
1 (Largest)	806	0.273	1,160	0.207	871	0.215	1,040	0.206
2	806	0.241	1,159	0.255	870	0.184	1,041	0.215
3	806	0.181	1,159	0.266	871	0.129	1,041	0.115
4 (Smallest)	806	0.000	1,159	0.264	873	0.000	1,041	0.000
Firm Age								
0 - 5 Years	861	0.294	956	0.364	890	0.087	820	0.141
6 - 10 Years	738	0.189	1,152	0.280	707	0.161	797	0.128
11 - 20 Years	921	0.177	1,433	0.235	1,050	0.106	1,235	0.062
21 + Years	704	0.055	1,096	0.182	838	0.022	1,311	0.033
Race/Ethnicity								
Asian	63	0.144	308	0.248	199	0.036	165	0.111
Black	53	0.084	442	0.211	259	0.027	119	0.000
Hispanic	50	0.211	291	0.222	243	0.046	146	0.018
White	2,984	0.188	3,559	0.256	2,745	0.098	3,616	0.074
Other	74	0.091	37	0.237	39	0.154	117	0.512
Gender								
Male	2,822	0.187	3,797	0.254	2,722	0.110	3,275	0.111
Female	402	0.114	840	0.226	763	0.006	888	0.000

Table 4
Median Capital Structure Ratios by Selected Firm and Owner Characteristics
Panel B: Capital Structure as Measured by the Ratio of Total Liabilities to Total Assets
(Data are taken from the 1987, 1993, 1998, and 2003 Surveys of Small Business Finances)

Variables	1987 Obs	SSBF Median	1993 Obs	SSBF Median	1998 Obs	SSBF Median	2003 Obs	SSBF Median
All Firms	3,224	0.394	4,637	0.474	3,485	0.347	4,163	0.275
Organizational Form								
Proprietorship	1,195	0.223	1,492	0.414	1,375	0.111	1,298	0.080
Partnership or LLP	255	0.414	337	0.428	218	0.400	337	0.313
S Corporation	449	0.542	1,100	0.578	1,013	0.558	1,532	0.500
C Corporation	1,325	0.481	1,708	0.515	851	0.536	941	0.555
LLC		N/A		N/A	28	0.577	55	0.459
Asset Quartile								
1 (Largest)	806	0.545	1,160	0.500	871	0.436	1,040	0.448
2	806	0.444	1,159	0.448	870	0.414	1,041	0.386
3	806	0.356	1,159	0.457	871	0.381	1,041	0.271
4 (Smallest)	806	0.222	1,159	0.512	873	0.025	1,041	0.069
Firm Age								
0 - 5 Years	861	0.529	956	0.563	890	0.421	820	0.451
6 - 10 Years	738	0.414	1,152	0.500	707	0.411	797	0.322
11 - 20 Years	921	0.372	1,433	0.460	1,050	0.348	1,235	0.260
21 + Years	704	0.235	1,096	0.397	838	0.220	1,311	0.199
Race/Ethnicity								
Asian	63	0.367	308	0.453	199	0.213	165	0.386
Black	53	0.193	442	0.471	259	0.185	119	0.240
Hispanic	50	0.471	291	0.434	243	0.271	146	0.229
White	2,984	0.401	3,559	0.478	2,745	0.362	3,616	0.273
Other	74	0.273	37	0.512	39	0.387	117	0.709
Gender								
Male	2,822	0.396	3,797	0.477	2,722	0.370	3,275	0.314
Female	402	0.364	840	0.470	763	0.226	888	0.169

Table 5
WLS Regression Analysis Explaining Determinants of Capital Structure at Privately Held Firms
Panel A: Capital Structure as Measured by the Ratio of Total Loans to Total Assets
(Data are taken from the 1987, 1993, 1998, and 2003 Surveys of Small Business Finances)
(**a**, **b** and **c** indicate statistical significance at the 0.01, 0.05 and 0.10 levels, respectively.)

	1987 SSBF			1993 SSBF			1998 SSBF			2003 SSBF		
Observations	3,223			4,637			3,484			4,163		
F Value	23.10		a	24.06		a	24.72		a	18.58		a
Root MSE	11.41			11.47			22.20			59.43		
Dep Mean	0.311			0.354			0.399			0.614		
Adj R-Sq	0.131			0.099			0.135			0.089		
Coeff Var	3673.19			3235.92			5569.71			9676.90		
Variable	Coef.	t-stat		Coef.	t-stat		Coef.	t-stat		Coef.	t-stat	
Intercept	0.621	10.38	a	0.755	17.80	a	1.173	15.70	a	3.122	16.61	a
Firm Characteristics												
ln (Assets)	-0.028	-5.52	a	-0.032	-9.04	a	-0.089	-14.36	a	-0.248	-15.90	a
ln (Firm Age)	-0.066	-8.76	a	-0.053	-6.93	a	-0.048	-4.15	a	-0.091	-3.31	a
Return on Assets	-0.022	-2.64	a	-0.018	-4.21	a	-0.002	-0.21		-0.052	-2.28	b
Cash to Assets	-0.347	-10.54	a	-0.283	-12.16	a	-0.199	-5.27	a	-0.215	-2.35	b
Tangible Assets to Assets	0.171	5.74	a	0.160	8.13	a	0.073	2.03	b	0.103	1.10	
Employment Growth Pos.	0.053	-0.59	a	0.020	1.56		n/a			0.006	0.08	
Employment Growth Neg.	-0.010	2.74	a	0.023	1.77	c	n/a			0.396	4.30	a
Trade Credit Paid Late	0.047	3.50	a	0.008	0.75		0.078	3.36	a	0.268	4.60	a
Number of Banks	0.049	5.59	a	0.060	8.81	a	0.148	11.03	a	0.110	3.42	a
Number of Nonbanks	0.065	9.69	a	0.047	9.76	a	0.121	13.16	a	0.216	10.47	a
C Corporation	0.085	5.33	a	0.035	2.59	a	0.201	7.10	a	0.481	6.12	a
S Corporation	0.149	6.83	a	0.075	5.14	a	0.216	8.34	a	0.406	6.79	a
LLC							0.318	2.81	a	-0.006	-0.03	
Partnership or LLP	0.070	2.85	a	0.021	1.02		0.114	2.81	a	0.252	2.72	a
Race, Ethnicity, Gender												
Female Owner	0.024	1.31		-0.033	-2.51	b	0.014	0.61		-0.289	-5.08	a
Black Owner	-0.061	-1.44		-0.069	-2.24	b	-0.047	-0.93		0.018	0.15	
Asian Owner	-0.064	-1.69	c	0.000	0.01		-0.028	-0.57		0.014	0.12	
Hispanic Owner	-0.029	-0.63		-0.018	-0.69		-0.023	-0.54		-0.110	-0.93	
Industrial Classification												
SIC 2	-0.016	-0.44		0.012	0.42		-0.061	-1.04		0.015	0.10	
SIC 3	0.023	0.68		0.002	0.08		-0.001	-0.01		-0.038	-0.28	
SIC 4	0.025	0.60		0.045	1.33		0.131	2.24	b	0.248	1.76	c
SIC 51	-0.002	-0.09		-0.042	-1.88	c	-0.069	-1.47		-0.221	-1.81	c
SIC 52	0.012	0.57		0.003	0.14		-0.065	-1.78	c	-0.077	-0.84	
SIC 6	0.152	5.03	a	0.119	4.91	a	0.071	1.47		0.100	0.85	
SIC 7	0.045	1.93	c	0.017	0.95		-0.080	-2.28	b	-0.070	-0.81	
SIC 8	0.018	0.72		0.036	1.89	c	-0.102	-2.79	a	-0.017	-0.18	

Table 5
WLS Regression Analysis Explaining Determinants of Capital Structure at Privately Held Firms
Panel B: Capital Structure as Measured by the Ratio of Total Liabilities to Total Assets
(Data are taken from the 1987, 1993, 1998, and 2003 Surveys of Small Business Finances)
(**a**, **b** and **c** indicate statistical significance at the 0.01, 0.05 and 0.10 levels, respectively.)

	1987 SSBF			1993 SSBF			1998 SSBF			2003 SSBF		
Observations	3,223			4,637			3,484			4,163		
F-Value	29.99		a	22.67		a	24.21		a	69.53		a
Root MSE	13.68			13.19			40.04			23.92		
Dep Mean	0.477			0.561			0.756			0.849		
Adj R-Sq	0.165			0.0932			0.133			0.112		
Coeff Var	2868.48			2350.70			5295.26			8190.35		
Variable	Coef.	t-stat		Coef.	t-stat		Coef.	t-stat		Coef.	t-stat	
Intercept	0.892	12.44	a	1.087	22.28	a	2.389	17.73	a	3.998	18.19	a
Firm Characteristics												
ln (Assets)	-0.042	-6.96	a	-0.049	-12.18	a	-0.163	-14.49	a	-0.323	-17.71	a
ln (Firm Age)	-0.080	-8.81	a	-0.046	-5.17	a	-0.114	-5.51	a	-0.116	-3.59	a
Return on Assets	-0.052	-5.13	a	-0.002	-0.37		0.056	3.90	a	-0.027	-1.02	
Cash to Assets	-0.316	-8.00	a	-0.254	-9.50	a	-0.271	-3.97	a	-0.179	-1.67	c
Tangible Assets to Assets	-0.058	-1.61		0.079	3.48	a	-0.226	-3.35	a	-0.078	-0.71	
Employment Growth Pos.	0.002	0.10		0.026	1.78		n/a			0.088	1.08	
Employment Growth Neg.	0.074	3.14	a	0.039	2.57	b	n/a			0.426	3.96	a
Trade Credit Paid Late	0.124	7.73	a	0.079	6.12	a	0.312	7.45	a	0.462	6.79	a
Number of Banks	0.068	6.40	a	0.054	6.81	a	0.193	7.98	a	0.152	4.05	a
Number of Nonbanks	0.075	9.31	a	0.049	8.77	a	0.162	9.80	a	0.255	10.58	a
C Corporation	0.178	9.34	a	0.107	6.82	a	0.381	7.45	a	0.710	7.72	a
S Corporation	0.228	8.74	a	0.143	8.50	a	0.335	7.16	a	0.614	8.78	a
LLC	n/a			n/a			0.490	2.40	b	0.315	1.31	
Partnership or LLP	0.115	3.89	a	0.047	2.02	b	0.166	2.28	b	0.403	3.72	a
Race ,Ethnicity Gender												
Female Owner	0.033	1.48		-0.018	-1.19		-0.016	-0.38		-0.333	-5.01	a
Black Owner	-0.117	-2.31	b	-0.033	-0.94		-0.108	-1.19		0.109	0.74	
Asian Owner	-0.035	-0.77		-0.009	-0.28		-0.131	-1.50		0.015	0.11	
Hispanic Owner	0.030	0.55		-0.008	-0.27		-0.099	-1.28		-0.134	-0.97	
Industrial Classification												
SIC 2	-0.039	-0.92		-0.018	-0.52		-0.266	-2.53	b	-0.061	-0.34	
SIC 3	0.006	0.15		0.014	0.43		-0.218	-2.26	b	-0.023	-0.14	
SIC 4	-0.073	-1.49		0.047	1.20		0.134	1.27		0.244	1.47	
SIC 51	0.066	2.05	b	-0.002	-0.06		-0.130	-1.55		-0.201	-1.41	
SIC 52	-0.024	-0.94		-0.032	-1.58		-0.255	-3.87	a	-0.113	-1.06	
SIC 6	0.137	3.77	a	0.076	2.74	a	-0.100	-1.15		0.062	0.45	
SIC 7	0.017	0.62		-0.015	-0.73		-0.266	-4.22	a	-0.140	-1.39	
SIC 8	-0.036	-1.19		-0.028	-1.27		-0.277	-4.20	a	-0.026	-0.25	

Table 6
WLS Regression Analysis Explaining Determinants of Capital Structure at Privately Held Corporations
Panel A: Capital Structure as Measured by the Ratio of Total Loans to Total Assets
Data are taken from the 1987, 1993, 1998 and 2003 Surveys of Small Business Finances
a, b indicate statistical significance at the 0.01 and 0.05 levels, respectively.

	1987 SSBF		1993 SSBF		1998 SSBF		2003 SSBF	
Number of Observations	1,772		2,704		1,864		2,473	
F Value	14.00	a	20.87	a	17.29	a	20.16	a
Root MSE	11.40		9.93		20.44		53.43	
Dep Mean	0.353		0.386		0.491		0.747	
Adj R-Sq	0.139		0.139		0.149		0.146	
Variable	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
Intercept	0.981	10.90 a	0.712	11.29 a	1.846	15.54 a	4.525	16.01 a
Firm Characteristics								
ln (Assets)	-0.050	-7.43 a	-0.037	-8.24 a	-0.124	-14.47 a	-0.342	-16.05 a
ln (Firm Age)	-0.071	-6.62 a	-0.051	-5.03 a	-0.040	-2.44 b	-0.105	-2.77 a
ROA	-0.048	-3.90 a	-0.035	-5.46 a	0.000	-0.03	-0.196	-6.01 a
Cash to Assets	-0.228	-4.00 a	-0.217	-5.32 a	-0.324	-4.93 a	-0.110	-0.73
Tangible Assets to Assets	0.208	5.20 a	0.274	10.10 a	0.170	3.33 a	0.279	2.42 b
Employment Growth Positive	-0.018	-0.85	0.037	2.27 b	n/a	n/a	0.067	0.81
Employment Growth Negative	0.051	1.98 b	0.035	2.00 b	n/a	n/a	0.656	5.80 a
Trade Credit Paid Late	0.059	3.20 a	0.036	2.61 a	0.113	3.78 a	0.287	3.89 a
Number of Banks	0.030	2.67 a	0.032	3.91 a	0.101	5.65 a	0.110	2.76 a
Number of Nonbanks	0.047	5.15 a	0.029	5.38 a	0.069	5.74 a	0.138	5.65 a
Race, Ethnicity, Gender								
Female Owner	-0.055	-1.70	-0.055	-3.19 a	0.049	1.40	-0.214	-2.70 a
Black Owner	-0.029	-0.39	-0.044	-0.93	-0.113	-1.49	-0.431	-2.00 b
Asian Owner	-0.054	-0.95	-0.022	-0.60	-0.138	-1.97 b	-0.293	-2.05 b
Hispanic Owner	0.012	0.18	0.074	1.93	-0.028	-0.43	-0.259	-1.61
Industrial Classification								
SIC 2	0.004	0.09	0.066	1.89	-0.064	-0.83	0.401	2.13 b
SIC 3	-0.029	-0.69	0.034	1.07	0.005	0.07	0.090	0.56
SIC 4	0.018	0.36	0.068	1.77	0.053	0.72	0.490	2.77 a
SIC 51	-0.046	-1.34	-0.038	-1.45	-0.066	-1.13	0.076	0.55
SIC 52	-0.044	-1.34	0.017	0.73	-0.127	-2.38 b	0.072	0.60
SIC 6	0.095	2.27 b	0.083	2.70 a	0.002	0.03	0.159	0.98
SIC 7	-0.038	-1.13	0.039	1.63	-0.142	-2.78 a	0.039	0.34
SIC 8	-0.065	-1.65	0.080	2.99 a	-0.121	-2.23 b	0.141	1.18

Table 6
WLS Regression Analysis Explaining Determinants of Capital Structure at Privately Held Corporations
Panel B: Capital Structure as Measured by the Ratio of Total Liabilities to Total Assets
Data are taken from the 1987, 1993, 1998 and 2003 Surveys of Small Business Finances
a, b indicate statistical significance at the 0.01 and 0.05 levels, respectively.

	1987 SSBF		1993 SSBF		1998 SSBF		2003 SSBF	
Observations	1,772		2,704		1,864		2,473	
F-Value	14.18		14.13		17.77		2..21	
Root MSE	13.92		11.90		35.07		62.66	
Dep Mean	0.567		0.617		0.892		1.050	
Adj R-Sq	0.141		965		0.153		0.165	
Variable	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
Intercept	1.561	14.21 a	1.159	15.34 a	3.357	16.47 a	5.899	17.80 a
Firm Characteristics								
ln (Assets)	-0.065	-7.93 a	-0.054	-9.92 a	-0.196	-13.41 a	-0.441	-18.14 a
ln (Firm Age)	-0.093	-7.06 a	-0.049	-4.04 a	-0.093	-3.34 a	-0.112	-2.51 b
ROA	-0.093	-6.14 a	-0.118	-2.29 b	0.069	3.41 a	-0.206	-5.41 a
Cash to Assets	-0.318	-5.51 a	-0.198	-4.07 a	-0.596	-5.29 a	0.067	-0.38
Tangible Assets to Assets	-0.040	-0.81	0.163	5.00 a	-0.028	-0.32	0.045	0.33
Employment Growth Positive	-0.010	-0.40	0.052	2.65 a	n/a	n/a	0.215	2.24
Employment Growth Negative	0.068	2.13 b	0.053	2.57 b	n/a	n/a	0.732	5.51 a
Trade Credit Paid Late	0.124	5.74 a	0.095	5.70 a	0.311	6.05 a	0.523	6.04 a
Number of Banks	0.050	3.65 a	0.037	3.73 a	0.133	4.35 a	0.174	3.72 a
Number of Nonbanks	0.054	4.78 a	0.037	5.68 a	0.091	4.42 a	0.173	6.02 a
Race, Ethnicity, and Gender								
Female Owner	-0.016	-0.48	-0.019	-0.93	0.113	1.89	-0.311	-3.34 a
Black Owner	-0.075	-0.81 b	-0.012	-0.21	-0.224	-1.72	-0.248	-0.98
Asian Owner	-0.131	-1.90	-0.061	-1.42	-0.252	-2.09 b	-0.341	-2.03 b
Hispanic Owner	0.085	1.06	0.074	1.62	-0.081	-0.71	-0.369	-1.96 b
Industrial Classification								
SIC 2	-0.040	-0.73	0.019	0.47	-0.321	-2.42 b	0.410	1.86
SIC 3	-0.062	-1.23	0.020	0.53	-0.170	-1.46	0.216	1.15
SIC 4	-0.083	-1.32	0.043	1.01	0.041	0.33	0.426	2.05 b
SIC 51	0.014	0.34	0.002	0.05	0.148	-1.47	0.152	0.94
SIC 52	-0.074	-1.84	-0.002	-0.07	-0.328	-3.57 a	0.159	1.14
SIC 6	0.079	1.54	0.023	0.63 a	-0.145	-1.28	0.101	0.53
SIC 7	-0.086	-2.08 b	-0.013	-0.44	-0.366	-4.16 a	-0.019	-0.14
SIC 8	-0.169	-3.52 a	-0.029	-0.93	-0.301	-3.25 a	0.093	0.67

Appendix Table A1
Descriptive Statistics for Variables Used to Explain Determinants of Capital Structure
Panel A: 1987 SSBF

Variable	Median	Mean	Std Error	Minimum	Maximum
Loans to Assets	0.177	0.312	0.007	0	1.89
Liabilities to Assets	0.394	0.478	0.008	0	2.58
Assets	99,000	476,254	43,080	0	154,087,353
Sales	250,000	1,251,382	108,277	180	202,000,000
Employment	4	11.145	0.484	0.5	475
Firm Age	10	13.265	0.207	0	118
Return on Assets	0.207	0.557	0.014	-0.325	2.38
Cash to Assets	0.085	0.162	0.004	-0.044	1
Tangible Assets to Assets	0.667	0.615	0.005	0.005	1
Employment Growth is Pos.	0	0.242	0.007	0	1
Employment Growth is Neg.	0	0.125	0.006	0	1
Trade Credit Paid Late	0	0.420	0.009	0	1
Number of Banks	1	1.317	0.013	0	12
Number of Nonbanks	0	0.725	0.017	0	11
Number of Financial Institutions	2	2.042	0.023	0	12
C Corporation	0	0.392	0.009	0	1
S Corporation	0	0.124	0.006	0	1
Partnership or LLP	0	0.081	0.005	0	1
Proprietorship	0	0.403	0.009	0	1
Female Owner	0	0.138	0.006	0	1
Asian Owner	0	0.023	0.003	0	1
Black Owner	0	0.030	0.003	0	1
Hispanic Owner	0	0.020	0.002	0	1
SIC 1	0	0.131	0.006	0	1
SIC 2	0	0.042	0.004	0	1
SIC 3	0	0.048	0.004	0	1
SIC 4	0	0.029	0.003	0	1
SIC 51	0	0.100	0.005	0	1
SIC 52	0	0.264	0.008	0	1
SIC 6	0	0.068	0.004	0	1
SIC 7	0	0.184	0.007	0	1
SIC 8	0	0.132	0.006	0	1

Appendix Table A1
Descriptive Statistics for Variables Used to Explain Determinants of Capital Structure
Panel B: 1993 SSBF

Variable	Median	Mean	Std Error	Minimum	Maximum
Loans to Assets	0.2513755	0.354	0.005	0	1.21
Liabilities to Assets	0.4737549	0.561	0.006	0	1.59
Assets	69,435	488,844	40,729	0	238,655,000
Sales	190,000	1,001,330	64,368	0	335,660,000
Employment	3	8.494	0.336	0.5	495
Firm Age	11	14.284	0.178	0	216
Return on Assets	0.213	0.690	0.019	-1.05	4.23
Cash to Assets	0.108	0.197	0.004	-0.026	1
Tangible Assets to Assets	0.700	0.656	0.004	0.000	1.000
Employment Growth is Pos.	0	0.377	0.007	0	1
Employment Growth is Neg.	0	0.268	0.007	0	1
Business Delinquencies	0	0.190	0.006	0	1
Trade Credit Paid Late	0	0.363	0.007	0	1
Number of Banks	1	1.262	0.012	0	13
Number of Nonbanks	1	0.844	0.017	0	13
Number of Fin'l Institutions	2	2.106	0.021	0	19
C Corporation	0	0.284	0.007	0	1
S Corporation	0	0.203	0.006	0	1
Partnership or LLP	0	0.080	0.004	0	1
Proprietorship	0	0.432	0.007	0	1
Female Owner	0	0.206	0.006	0	1
Asian Owner	0	0.036	0.003	0	1
Black Owner	0	0.029	0.002	0	1
Hispanic Owner	0	0.043	0.003	0	1
SIC 1	0	0.142	0.005	0	1
SIC 2	0	0.039	0.003	0	1
SIC 3	0	0.042	0.003	0	1
SIC 4	0	0.028	0.002	0	1
SIC 51	0	0.085	0.004	0	1
SIC 52	0	0.217	0.006	0	1
SIC 6	0	0.071	0.004	0	1
SIC 7	0	0.211	0.006	0	1
SIC 8	0	0.166	0.005	0	1

Descriptive Statistics for Variables Used to Explain Determinants of Capital Structure
Panel C: 1998 SSBF

Variable	Median	Mean	Std Error	Minimum	Maximum
Loans to Assets	0.092	0.399	0.011	0	2.27
Liabilities to Assets	0.347	0.756	0.019	0	4.26
Assets	58,113	424,989	34,339	10	99,912,000
Sales	160,000	1,005,846	109,076	0	624,000,000
Employment	3	8.715	0.398	1	482
Firm Age	11	13.392	0.188	0	104
Return on Assets	0.336	0.873	0.023	-1.45	3.74
Cash to Assets	0.117	0.243	0.005	-0.052	1
Business Delinquencies	0	0.136	0.006	0	1
Trade Credit Paid Late	0	0.270	0.008	0	1
Number of Banks	1	1.226	0.013	0	13
Number of Nonbanks	1	0.839	0.019	0	15
Number of Fin'l Institutions	2	2.065	0.024	0	20
C Corporation	0	0.193	0.007	0	1
S Corporation	0	0.243	0.007	0	1
LLC	0	0.008	0.001	0	1
Partnership or LLP	0	0.068	0.004	0	1
Proprietorship	0	0.488	0.008	0	1
Female Owner	0	0.238	0.007	0	1
Asian Owner	0	0.043	0.003	0	1
Black Owner	0	0.040	0.003	0	1
Hispanic Owner	0	0.056	0.004	0	1
SIC 1	0	0.119	0.005	0	1
SIC 2	0	0.038	0.003	0	1
SIC 3	0	0.047	0.004	0	1
SIC 4	0	0.037	0.003	0	1
SIC 51	0	0.072	0.004	0	1
SIC 52	0	0.192	0.007	0	1
SIC 6	0	0.064	0.004	0	1
SIC 7	0	0.246	0.007	0	1
SIC 8	0	0.183	0.007	0	1

Appendix Table A1
Descriptive Statistics for Variables Used to Explain Determinants of Capital Structure
Panel D: 2003 SSBF

Variable	Median	Mean	Std Error	Minimum	Maximum
Loans to Assets	0.074	0.614	0.025	0	11.3
Liabilities to Assets	0.275	0.849	0.030	0	12.8
Assets	72,000	567,881	47,831	16	235,027,709
Sales	200,000	1,098,386	73,880	0	210,861,289
Employment	3	8.736	0.333	0	486
Firm Age	12	14.381	0.172	1	103
Return on Assets	0.287	0.749	0.018	-1.000	3.000
Cash to Assets	0.105	0.225	0.004	-0.080	1.000
Tangible Assets to Assets	0.545	0.513	0.005	0.000	1.000
Employment Growth Positive	0	0.154	0.006	0	1
Employment Growth Negative	0	0.077	0.006	0	1
Business Delinquencies	0	0.159	0.006	0	1
Trade Credit Paid Late	0	0.247	0.007	0	1
Number of Banks	1	1.246	0.013	0	20
Number of Nonbanks	1	1.165	0.019	0	11
Number of Fin'l Institutions	2	2.411	0.024	0	20
C Corporation	0	0.146	0.005	0	1
S Corporation	0	0.314	0.007	0	1
LLC	0	0.014	0.002	0	1
Partnership or LLP	0	0.086	0.004	0	1
Proprietorship	0	0.440	0.008	0	1
Female Owner	0	0.258	0.007	0	1
Asian Owner	0	0.045	0.003	0	1
Black Owner	0	0.038	0.003	0	1
Hispanic Owner	0	0.043	0.003	0	1
SIC 1	0	0.116	0.005	0	1
SIC 2	0	0.031	0.003	0	1
SIC 3	0	0.041	0.003	0	1
SIC 4	0	0.039	0.003	0	1
SIC 51	0	0.060	0.004	0	1
SIC 52	0	0.186	0.006	0	1
SIC 6	0	0.070	0.004	0	1
SIC 7	0	0.249	0.007	0	1
SIC 8	0	0.207	0.006	0	1

Appendix Table A2A
Capital Ratios by Selected Firm and Owner Characteristics
Data from 1987 SSBF
Panel A: Capital Structure as Measured by the Ratio of Loans to Assets

Variable	Obs.	Median	Mean	Std Error
Loans to Assets	3,224	0.177	0.312	0.007
Organizational Form	Obs	Median	Mean	Std Error
Proprietorship	1,195	0.051	0.253	0.011
Partnership or LLP	255	0.245	0.340	0.023
S Corporation	449	0.284	0.414	0.022
C Corporation	1,325	0.236	0.334	0.010
LLC				
Asset Quartile	Obs	Median	Mean	Std Error
1 (Largest)	806	0.273	0.345	0.011
2	806	0.241	0.334	0.012
3	806	0.181	0.300	0.012
4 (Smallest)	806	0.000	0.288	0.017
Firm Age	Obs	Median	Mean	Std Error
0 - 5 Years	861	0.294	0.390	0.014
6 - 10 Years	738	0.189	0.331	0.016
11 - 20 Years	921	0.177	0.285	0.011
21 + Years	704	0.055	0.213	0.013
Race/Ethnicity	Obs	Median	Mean	Std Error
Asian	63	0.144	0.310	0.054
Black	53	0.084	0.252	0.046
Hispanic	50	0.211	0.310	0.046
White	2,984	0.188	0.316	0.007
Other	74	0.091	0.183	0.029
Gender	Obs	Median	Mean	Std Error
Male	2,822	0.187	0.312	0.007
Female	402	0.114	0.311	0.021

Appendix Table A2A
Capital Ratios by Selected Firm and Owner Characteristics
Data from 1987 SSBF
Panel B: Capital Structure as Measured by the Ratio of Liabilities to Assets

Variable	Obs.	Median	Mean	Std Error
Liabilities to Assets	3,224	0.394	0.478	0.008
Organizational Form	Obs	Median	Mean	Std Error
Proprietorship	1,195	0.223	0.362	0.012
Partnership or LLP	255	0.414	0.488	0.029
S Corporation	449	0.542	0.618	0.025
C Corporation	1,325	0.481	0.551	0.013
LLC				
Asset Quartile	Obs	Median	Mean	Std Error
1 (Largest)	806	0.545	0.561	0.012
2	806	0.444	0.503	0.014
3	806	0.356	0.449	0.015
4 (Smallest)	806	0.222	0.444	0.021
Firm Age	Obs	Median	Mean	Std Error
0 - 5 Years	861	0.529	0.576	0.017
6 - 10 Years	738	0.414	0.513	0.019
11 - 20 Years	921	0.372	0.441	0.014
21 + Years	704	0.235	0.347	0.015
Race/Ethnicity	Obs	Median	Mean	Std Error
Asian	63	0.367	0.501	0.065
Black	53	0.193	0.345	0.048
Hispanic	50	0.471	0.534	0.062
White	2,984	0.401	0.484	0.009
Other	74	0.273	0.312	0.032
Gender	Obs	Median	Mean	Std Error
Male	2,822	0.396	0.479	0.009
Female	402	0.364	0.474	0.026

Appendix Table A2B
Capital Ratios by Selected Firm and Owner Characteristics
Data from 1993 SSBF
Panel A: Capital Structure as Measured by the Ratio of Loans to Assets

Variable		Median	Mean	Std Error
Loans to Assets		0.251	0.354	0.005
Organizational Form	Obs	Median	Mean	Std Error
Proprietorship	1,492	0.196	0.323	0.009
Partnership or LLP	337	0.259	0.347	0.020
S Corporation	1,100	0.352	0.420	0.011
C Corporation	1,708	0.254	0.358	0.009
LLC				
Asset Quartile	Obs	Median	Mean	Std Error
1 (Largest)	1,160	0.207	0.357	0.012
2	1,159	0.255	0.358	0.011
3	1,159	0.266	0.349	0.010
4 (Smallest)	1,159	0.264	0.345	0.009
Firm Age	Obs	Median	Mean	Std Error
0 - 5 Years	956	0.364	0.419	0.013
6 - 10 Years	1,152	0.280	0.365	0.011
11 - 20 Years	1,433	0.235	0.338	0.009
21 + Years	1,096	0.182	0.299	0.011
Race/Ethnicity	Obs	Median	Mean	Std Error
Asian	308	0.248	0.353	0.021
Black	442	0.211	0.313	0.017
Hispanic	291	0.222	0.321	0.021
White	3,559	0.256	0.358	0.006
Other	37	0.237	0.343	0.065
Gender	Obs	Median	Mean	Std Error
Male	3,797	0.254	0.357	0.006
Female	840	0.226	0.344	0.013

Appendix Table A2B
Capital Ratios by Selected Firm and Owner Characteristics
Data from 1993 SSBF
Panel B: Capital Structure as Measured by the Ratio of Liabilities to Assets

Variable		Median	Mean	Std Error
Liabilities to Assets		0.474	0.561	0.006
Organizational Form	Obs	Median	Mean	Std Error
Proprietorship	1,492	0.414	0.505	0.011
Partnership or LLP	337	0.428	0.541	0.023
S Corporation	1,100	0.578	0.650	0.013
C Corporation	1,708	0.515	0.587	0.010
LLC				
Asset Quartile	Obs	Median	Mean	Std Error
1 (Largest)	1,160	0.500	0.599	0.013
2	1,159	0.448	0.552	0.013
3	1,159	0.457	0.522	0.011
4 (Smallest)	1,159	0.512	0.553	0.010
Firm Age	Obs	Median	Mean	Std Error
0 - 5 Years	956	0.563	0.626	0.014
6 - 10 Years	1,152	0.500	0.587	0.013
11 - 20 Years	1,433	0.460	0.538	0.011
21 + Years	1,096	0.397	0.495	0.012
Race/Ethnicity	Obs	Median	Mean	Std Error
Asian	308	0.453	0.542	0.024
Black	442	0.471	0.559	0.020
Hispanic	291	0.434	0.535	0.025
White	3,559	0.478	0.562	0.007
Other	37	0.512	0.652	0.081
Gender	Obs	Median	Mean	Std Error
Male	3,797	0.477	0.560	0.007
Female	840	0.470	0.566	0.015

Appendix Table A2C
Capital Ratios by Selected Firm and Owner Characteristics
Data from 1998 SSBF
Panel A: Capital Structure as Measured by the Ratio of Loans to Assets

Variable		Median	Mean	Std Error
Loans to Assets		0.092	0.399	0.011
Organizational Form	Obs	Median	Mean	Std Error
Proprietorship	1375	0.000	0.313	0.016
Partnership or LLP	218	0.182	0.392	0.037
S Corporation	1013	0.257	0.505	0.020
C Corporation	851	0.231	0.474	0.022
LLC	28	0.538	0.576	0.113
Asset Quartile	Obs	Median	Mean	Std Error
1 (Largest)	871	0.215	0.320	0.012
2	870	0.184	0.361	0.016
3	871	0.129	0.409	0.020
4 (Smallest)	873	0.000	0.450	0.027
Firm Age	Obs	Median	Mean	Std Error
0 - 5 Years	890	0.087	0.473	0.023
6 - 10 Years	707	0.161	0.425	0.023
11 - 20 Years	1050	0.106	0.377	0.018
21 + Years	838	0.022	0.301	0.019
Race/Ethnicity	Obs	Median	Mean	Std Error
Asian	199	0.036	0.354	0.042
Black	259	0.027	0.409	0.043
Hispanic	243	0.046	0.382	0.039
White	2745	0.098	0.402	0.012
Other	39	0.154	0.383	0.093
Gender	Obs	Median	Mean	Std Error
Male	2722	0.110	0.391	0.011
Female	763	0.006	0.423	0.025

Appendix Table A2C
Capital Ratios by Selected Firm and Owner Characteristics
Data from 1998 SSBF
Panel B: Capital Structure as Measured by the Ratio of Liabilities to Assets

Variable		Median	Mean	Std Error
Liabilities to Assets		0.347	0.756	0.019
Organizational Form	Obs	Median	Mean	Std Error
Proprietorship	1375	0.111	0.635	0.031
Partnership or LLP	218	0.400	0.722	0.070
S Corporation	1013	0.558	0.898	0.034
C Corporation	851	0.536	0.886	0.039
LLC	28	0.577	1.002	0.201
Asset Quartile	Obs	Median	Mean	Std Error
1 (Largest)	871	0.436	0.544	0.017
2	870	0.414	0.633	0.027
3	871	0.381	0.760	0.035
4 (Smallest)	873	0.025	0.940	0.051
Firm Age	Obs	Median	Mean	Std Error
0 - 5 Years	890	0.421	0.916	0.043
6 - 10 Years	707	0.411	0.834	0.043
11 - 20 Years	1050	0.348	0.683	0.031
21 + Years	838	0.220	0.564	0.032
Race/Ethnicity	Obs	Median	Mean	Std Error
Asian	199	0.213	0.610	0.071
Black	259	0.185	0.765	0.076
Hispanic	243	0.271	0.670	0.066
White	2745	0.362	0.768	0.021
Other	39	0.387	0.799	0.187
Gender	Obs	Median	Mean	Std Error
Male	2722	0.370	0.750	0.021
Female	763	0.226	0.776	0.045

Appendix Table A2D
Capital Ratios by Selected Firm and Owner Characteristics
Data from 2003 SSBF
Panel A: Capital Structure as Measured by the Ratio of Loans to Assets

Variable		Median	Mean	Std Error
Loans to Assets	4163	0.074	0.614	0.025
Organizational Form	Obs	Median	Mean	Std Error
Proprietorship	1,298	0.000	0.498	0.045
Partnership or LLP	337	0.141	0.548	0.063
S Corporation	1,532	0.237	0.759	0.046
C Corporation	941	0.261	0.719	0.050
LLC	55	0.169	0.339	0.056
Asset Quartile	Obs	Median	Mean	Std Error
1 (Largest)	1,040	0.206	0.350	0.013
2	1,041	0.215	0.369	0.016
3	1,041	0.115	0.466	0.033
4 (Smallest)	1,041	0.000	0.974	0.076
Firm Age	Obs	Median	Mean	Std Error
0 - 5 Years	820	0.141	0.859	0.072
6 - 10 Years	797	0.128	0.585	0.050
11 - 20 Years	1,235	0.062	0.541	0.042
21 + Years	1,311	0.033	0.478	0.039
Race/Ethnicity	Obs	Median	Mean	Std Error
Asian	165	0.111	0.582	0.112
Black	119	0.000	0.775	0.176
Hispanic	146	0.018	0.530	0.110
White	3,616	0.074	0.591	0.026
Other	117	0.512	2.047	0.342
Gender	Obs	Median	Mean	Std Error
Male	3,275	0.111	0.655	0.030
Female	888	0.000	0.496	0.046

Appendix Table A2D
Capital Ratios by Selected Firm and Owner Characteristics
Data from 2003 SSBF
Panel B: Capital Structure as Measured by the Ratio of Liabilities to Assets

Variable		Median	Mean	Std Error
Liabilities to Assets	4,163	0.275	0.849	0.030
Organizational Form	Obs	Median	Mean	Std Error
Proprietorship	1,298	0.080	0.654	0.052
Partnership or LLP	337	0.313	0.784	0.078
S Corporation	1,532	0.500	1.069	0.055
C Corporation	941	0.555	1.009	0.059
LLC	55	0.459	0.771	0.171
Asset Quartile	Obs	Median	Mean	Std Error
1 (Largest)	1,040	0.448	0.531	0.014
2	1,041	0.386	0.538	0.021
3	1,041	0.271	0.623	0.038
4 (Smallest)	1,041	0.069	1.335	0.090
Firm Age	Obs	Median	Mean	Std Error
0 - 5 Years	820	0.451	1.149	0.083
6 - 10 Years	797	0.322	0.878	0.066
11 - 20 Years	1,235	0.260	0.733	0.048
21 + Years	1,311	0.199	0.658	0.046
Race/Ethnicity	Obs	Median	Mean	Std Error
Asian	165	0.386	0.831	0.128
Black	119	0.240	1.113	0.234
Hispanic	146	0.229	0.769	0.127
White	3,616	0.273	0.819	0.031
Other	117	0.709	2.354	0.383
Gender	Obs	Median	Mean	Std Error
Male	3,275	0.314	0.893	0.035
Female	888	0.169	0.721	0.057