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Abstract

This paper analyzes how different levels of debtor protection across U.S. states affect small firms' access to credit, as well as the price and non-price terms of their loans. We use a measure of debtor protection that has its maximum value when the borrower's home equity is lower than the state homestead exemption (debtor is fully protected), and is decreasing in the difference between the home equity and the homestead exemption (the amount that the creditor can seize). We find that the unlimited liability small businesses (sole proprietorships and most partnerships) have lower access to credit in states with more debtor-friendly bankruptcy laws. In addition, these businesses face harsher loan terms – they are more likely to pledge business collateral, have shorter maturities, pay higher rates, and borrow smaller amounts. For small limited liability companies (corporations and limited liability partnerships), we find only an increase in the loan rate, and a consequent decrease in loan size. Our results suggest that the credit market strongly penalizes unlimited liability small businesses located in states with debtor-friendly personal bankruptcy laws.

Keywords: Debtor protection, bankruptcy, small business, credit availability, agency problems.

JEL Classification: G32, G33, K2, K35

I. Introduction

The annual number of filings for personal bankruptcy in the U.S. doubled from 0.8 million to 1.6 million between 1994 and 2004. This has raised concerns that the U.S. personal bankruptcy law may be overly generous towards debtors. The main economic rationale for personal bankruptcy exemptions is to preserve debtors' ex post incentives. Mandatory debt discharges can play an important role in preventing potential entrepreneurs from adjusting their effort levels downward after default.

The insurance provided by bankruptcy law may also have a positive effect on entrepreneurship. The more lenient is the bankruptcy law, the more attractive it is for risk-averse potential entrepreneurs to go into business because more of their assets are sheltered from creditors if the firm fails (Fan and White (2001), Kihlstrom and Laffont (1979)). In the long term, the increase in entrepreneurial activity may benefit the economy (Baumol (1968), Iyigun and Owen (1998)).

However, the leniency of the personal bankruptcy law may create agency problems and adverse incentives for debtors to over-borrow and/or shift into riskier projects. In response to these incentives, lenders may tighten their lending standards and terms and reduce the availability of credit, with corresponding ill effects on the economy. Evans and Jovanovic (1989) and Holtz-Eakin, Joulfaian, and Rosen (1994) find evidence that decreased credit availability for entrepreneurs reduces the growth rate and survival probability of their firms. Thus, it is possible that debtor protection actually harms

debtors and potential debtors by adversely affecting their credit availability and terms of credit.

This study examines these potential costs. Specifically, we exploit the variation in the application across states of U.S. personal bankruptcy law to study the effect of debtor protection on small firms' access to credit, and on the price and non-price terms of bank loans to these companies.

The U.S institutional framework in terms of bankruptcy law is ideal for our purposes. While personal bankruptcy law was designed for consumers, it also affects unlimited liability firms (sole proprietorships and most partnerships) whose owners are legally liable for the firm's debts. To a lesser extent, it could also affect small limited liability firms (corporations and limited liability partnerships), as long as lenders require the owners of these firms to personally guarantee their loans or these firms could transfer assets to their owners. Although federal law governs personal bankruptcy in the U.S., the states are allowed to adopt their own bankruptcy exemption levels. Debtors who file for personal bankruptcy under Chapter 7 (discussed below) must turn over any assets they own above a predetermined exemption level, but their future earnings are completely exempt from the obligation to repay, the so-called "fresh start" principle. A higher exemption level therefore provides partial wealth insurance to debtors.

Our focus is on the *ex ante* incentives introduced by bankruptcy exemptions. Exemptions should affect both the demand for and the supply of credit. As argued by Gropp, Scholz, and White (1997), wealth insurance makes risk-averse borrowers better off, increasing the demand for credit. However on the supply side, because banks anticipate that exemptions increase the probability of default and the expected loss given

default on a loan, higher exemption levels should lead to a retraction in credit supply. This retraction should then translate into harsher loan contract terms, such as higher rates, smaller credit amounts, and/or shorter maturity, and may result in credit rationing (Stiglitz and Weiss (1981)). To some degree, the higher exemption levels may be offset by the pledging of collateral, given that the exemptions do not apply to secured assets.

We investigate these issues using data from the 1993, 1998 and 2003 Surveys of Small Business Finances (SSBF), which contain detailed information on whether and when the firm obtained credit, the contract features of the most recent loan obtained by the firm if credit was granted, as well as detailed firm and owner characteristics. We employ two main measures of debtor protection – our main exogenous variable of interest. The first measure of debtor protection is the homestead exemption in the state in which the firm is located. This is the maximum home equity value that a debtor can exempt when filing for personal bankruptcy. The second, our preferred measure, is a borrower-specific variable that also takes into account the value of the home equity of the firm owner. This measure has its maximum value when the home equity value is lower than the exemption (debtor is fully protected), and is decreasing in the difference between the home value and the exemptions (the amount that the creditor can seize). Because it takes into account the agents' actual incentives to file for bankruptcy, this is a more accurate measure of debtor protection.

We report four main empirical results. First, we find that increased debtor protection is associated with a significantly higher probability that an unlimited liability firm is denied credit or is discouraged from borrowing. This effect is economically significant: the probability of being denied or discouraged from borrowing decreases by

about 10% for firms located in the states with the highest exemptions (debtors are fully protected) compared to firms located in states with no exemptions (debtors are unprotected). Supporting this result, we also find that the pool of unlimited liability borrowers is significantly less risky (i.e., has higher credit scores) in high exemption states than in low exemption states.

Second, we find that high levels of debtor protection considerably deteriorate both price and non-price terms for the unlimited liability companies that do receive credit. Specifically, these firms do not face only higher interest rates and smaller loan amounts, but also significantly shorter maturities.

Third, we find that greater debtor protection decreases the likelihood that unlimited liability firms pledge personal real estate collateral. We provide some possible explanations for this result below. Also, consistent with our expectations, we find that greater debtor protection increases the incidence of business collateral. Taken together, these two results suggest that high levels of debtor protection induce a substitution from personal real estate collateral towards business collateral.

Fourth, for the limited liability firms, we do not find a reduction in access to credit driven by increased debtor protection. However, we do find some effect on the interest rates and, consequently, on the size of the loan.

The results of our paper may have important policy implications. We show that there are strong adverse effects of debtor protection on the unlimited liability firms. Not only is their access to the credit market reduced, but also the price and non-price terms of their credit are significantly deteriorated when financing is available. High levels of debtor protection seem to distort the legal purposes of the unlimited liability company

form, since debtors are in practice not fully personally liable for their firm's debts. The institutional framework may therefore prevent some of these small firms from pre-committing to harsh penalties, limiting their access to credit. In turn, this may hamper these entrepreneurs' growth opportunities, potentially affecting economic growth.

The main problems highlighted in our paper do not seem to have been addressed by the reform of the personal bankruptcy law that was passed in 2005. In order to prevent borrowers from abusing the bankruptcy laws and using them to clear debts they can afford to pay, the new law makes it more difficult for high-income people to file for Chapter 7. However, our results suggest that the personal bankruptcy law affects the credit availability and credit terms especially for firm owners of unlimited liability companies with low home values, and the new law does not seem to introduce any changes for this particular group of borrowers.

The paper proceeds as follows. Section II gives a very brief literature review and Section III details the institutional background of bankruptcy law in the U.S. Section IV describes the data set and the variables used in the analysis, Section V addresses the empirical methodology, and Section VI presents the results. Section VII concludes.

II. Literature Review

There is a growing interest in the academic literature in the effect of the legal system on the functioning of credit markets. Most of this empirical literature has focused on lending to large companies (e.g., Esty and Megginson (2003), Giannetti (2003), Bae and Ghoyal (2004), Esty (2004), Sufi (2005), Qian and Strahan (2007)) or on private

equity contracts (e.g., Lerner and Schoar (2005), Kaplan, Martel and Stromberg (2007), Bottazzi, Da Rin and Hellmann (forthcoming)).

To the best of our knowledge, Berkowitz and White (2004) is the only study analyzing the effect of legal debtor protection on small business lending. They also exploit the U.S. variation across states in exemption levels. However, our study differs from theirs in at least two important ways. First, we analyze the effect of the exemption level on the incidence of different types of collateral, on the maturity of the loan, and on the composition of the pool of borrowers, three issues left untested in their study. Moreover, our measure of debtor protection takes into account both the exemption level and the debtor's home equity value.

Second, while Berkowitz and White (2004) find an effect for all types of firms, we only find a significant reduction in credit access for the unlimited liability firms. The availability of more survey waves, and the use of a better measure of borrower risk could explain our different results. Specifically, while Berkowitz and White (2004) only use the 1993 Survey of Small Business Finances (SSBF), we also use the 1998 and 2003 SSBF, which enhances the statistical power of our tests. Moreover, while in the 1993 SSBF the legal form of the firm is not always clear, the two latter surveys clearly distinguish the unlimited liability firms from the limited liability firms. Finally, we use a credit score measure from an independent credit bureau (Dun & Bradstreet) that enables us to better control for firm credit quality..

Our paper is also related to the literature focusing on how differences in bankruptcy exemption levels affect aggregate household credit (e.g., Lin and White

(2001), and Gropp, Scholz, and White (1997)). These studies find that higher exemptions reduce availability and amount of credit to households.

III. Bankruptcy Law

There are two different personal bankruptcy procedures in the U.S. – Chapter 7 and Chapter 13 – and, during our sample period, debtors were allowed to choose between them.¹ When an individual files for bankruptcy, all collection efforts by creditors terminate. Under Chapter 13, the debtors' wealth is exempted, but they must propose a repayment plan. This plan typically involves using a proportion of the debtor's future earnings over a five-year period to repay debt. Repayment plans must give creditors the same amount they would receive under Chapter 7, but no more.

Under Chapter 7, all of the debtor's future earnings are exempt from the obligation to repay – the “fresh start” principle.² However, debtors must turn over any unsecured assets they own above a predetermined exemption level (the secured debts cannot be discharged). While the “fresh start” is mandated by Federal law, and applies all over the U.S., in 1978 Congress gave the states the right to adopt their own bankruptcy exemptions. The wealth exemptions vary widely across states as a result.

After our sample period, on October 17, 2005 a new bankruptcy law became effective. The purpose of the new law is mainly to reduce fraud and abuse in the bankruptcy system by high income agents. Under the new law, fewer people are allowed to file under Chapter 7; more are forced to file under Chapter 13. Specifically, people

¹ See White (2007) for a comprehensive exposition of personal bankruptcy law in the U.S.

² In 2005, about 75% of bankruptcy filings occurred under Chapter 7.

whose income is above the state's median income and that can afford to pay 25 percent of their unsecured debt are not allowed to file for Chapter 7 anymore. Also if a borrower's income is below the state's median, but can pay 25 percent of the unsecured debt, the Court may require the borrower to file for Chapter 13 instead of Chapter 7.³

There are generally two types of exemptions: for equity in owner-occupied residences (the homestead exemption), and for various other types of personal assets (the personal property exemption). The personal property may include assets as diverse as: the bible, other books, musical instruments, burial plots, family portraits, clothing, wedding rings, other jewelry, furniture, guns, pets, cattle, crops, motor vehicles, health aids, and food. While this personal property often has strong symbolic value for its owner, these assets are mostly uninteresting for a creditor. It is then improbable that creditors take into serious account in their credit decisions the personal property exemptions.⁴ In addition, the types of personal assets specified vary considerably across states. Consequently, we confine our analysis to the homestead exemptions.

³ It seems that the new law indeed targets mainly the high-income group, as the following article suggests:

"So how many people would be affected by means-testing? The estimates are that some 7-11 percent of current bankruptcy filers would be affected by the means-testing provisions of the bill. Roughly 80 percent of bankruptcy filers earn below their state median income, and so will get tossed out of the means-test immediately." [Zywicki, Todd. "Bankrupt Criticisms. The Bankruptcy Bill Deserves to Pass," March 15, 2005. <http://www.nationalreview.com/comment/zywicki200503150744.asp>]

⁴ There are several other reasons why the level of personal property exemptions is a poor measure of creditor protection. First, these exemptions are generally small in value compared to the homestead exemptions. Second, debtors can convert saleable non-exempt assets into home equity before filing for bankruptcy. Consequently, high homestead exemptions turn out to protect all types of wealth for debtors. Third, it is relatively easy for any individual who files for bankruptcy to conceal from creditors some personal assets (e.g., cash and jewelry). Fourth, in many states the law leaves unspecified the value of some assets. As a result, any attempt to quantify the personal property exemptions would likely result in a noisy measure of creditor protection. In line with these arguments, Berkowitz and White (2004) find no effect of their measure of personal property exemptions on any of the credit variables they analyze.

Table 1 displays the homestead exemptions by state for 1993, 1998 and 2003.⁵ The homestead exemptions vary widely across states, ranging from zero (e.g., Delaware and Maryland) to unlimited (e.g., Florida and Texas).⁶ In contrast to this variation, the states have made relatively few changes in their exemption levels over our sample period. Most of the changes in the exemptions levels that occurred during our sample period simply reflect nominal adjustments. The median homestead exemption increased at an annual rate of 1.9%, from \$30,000 in 1993 to 36,900 in 2003. These median exemptions actually match the Federal Bankruptcy Exemptions. This is because the Federal Exemptions are adjusted at every three-year interval to reflect changes in the CPI.

The mean homestead exemption increased at a substantially faster pace (4.9%), which results from sizeable increases in 2001 in the exemptions levels in some states (e.g., Massachusetts, New Hampshire, and Rhode Island).

IV. Data and Variables

We use data from the 1993, 1998, and 2003 Surveys of Small Business Finances (SSBF) to study the effects of bankruptcy law on small business credit. Because a

⁵ Some states allow their residents to choose between the state and the federal exemptions. In these cases, we selected the option which grants the claimant with the highest exemption level. In some states, married couples are allowed to double the amount of the exemption for home equity when filing for bankruptcy together (called “doubling”). We have doubled all amounts except in those cases where bankruptcy law explicitly prohibits “doubling.” We obtain the state-level homestead exemptions from Elias, Renauer, and Leonard (several editions).

⁶ The homestead exemptions are never truly unlimited. Those exemptions that do not contain a dollar limit contain a limit on the physical size of the lot, which depends on whether the property is located in a rural or urban area (see e.g., Berkowitz and Hynes (1999)).

consistent definition and a majority of questions are identical across all three surveys, we merge the surveys into a single dataset that spans 15 years (1991-2005).⁷

The SSBF contains detailed information on the financing experiences of a representative sample of for-profit, non-financial, non-governmental and non-agricultural businesses with less than 500 employees operating in the U.S. at the date of the survey. The survey asks respondents about their borrowing experiences within the preceding three years – whether they applied for or whether they were discouraged from applying for credit, and whether the credit application was successful. For the successful applications, the respondents then report the terms of the loan contract – the rate, size and maturity of the loan, and collateral requirements.

The survey also provides detailed information about the firm and the owner, such as the credit history (including the Dun & Bradstreet credit scores, which are based on business information), firm income statement and balance sheet information, and geographic location, industry, and ownership characteristics. In addition, the survey asks firms about the nature of the relationship they have with their financial providers – e.g., the duration of their relationship and the types of financial services purchased.

Of the 11,936 observations in our final sample, 7,362 correspond to limited liability firms, and 4,574 to unlimited liability firms.⁸ The unlimited liability group includes sole proprietorships and most partnerships, while the limited liability group

⁷ The data covers 1991 to 2005, rather than just the stated survey years of 1993, 1998, and 2003 because the questions were asked in years subsequent to the stated survey years, and refer to recent application and loan experiences that may have taken place in any of several years for each survey.

⁸ There are 12,434 observations in total in the three surveys. We dropped 498 observations due to missing data on: relationship and distance variables (293), the owner of the firm (59), the firm credit score (46), and the Herfindahl-Hirschman Index (HHI) (3). We additionally dropped 97 observations on firms that reported zero assets.

contains corporations (both regular and S-type), as well as the limited liability partnerships.⁹

A. Variables

Table 2 lists the variables and provides summary statistics (means and standard deviations) for the unlimited liability and limited liability firms.¹⁰

The main variable of interest is the homestead exemption in the state where the firm is located (see Table 1). The homestead exemption refers to equity in owner-occupied principal residences.

Our measure of credit rationing (the variable *Discouraged/Denied*) indicates whether a most recent credit application was ever denied or whether the manager was ever discouraged from applying for credit in the three preceding years. In our sample, the limited liability and the unlimited liability firms faced a similar discouraged/denial rate of 23%.

Because not all firms report a most recent borrowing experience (the ones that are discouraged from borrowing, denied a loan, or simply do not apply), we only observe the remaining endogenous variables, i.e., the terms of the loan contract, for 35% of the firms

⁹ Unlike the 1998 and 2003 surveys, the 1993 SSBF does not distinguish between limited and unlimited liability partnerships. We choose to assign the partnerships in the 1993 SSBF to the unlimited liability group to minimize the misclassification bias. We infer from the small number of limited liability partnerships in the other surveys that this bias should be rather small. For instance, in the 2003 SSBF, only 1% of all firms in the sample (or 3% of all unlimited liability firms) would be wrongly classified as unlimited liability companies. Nevertheless, as a robustness check, we re-estimate the models after dropping all the partnerships in the 1993 SSBF, and find no significant differences in the results.

¹⁰ To ensure accurate representation of the population of small businesses, the SSBF uses a stratified random sample design, with stratification based on census area, rural/urban location, employment size, and ethnicity of the owner. In all our statistical and econometric analyses, we use the sampling weights that make the sample representative of all small businesses in the U.S.

in the sample. These terms are the maturity,¹¹ rate, and size of the loan, and separate dummies indicating whether personal real estate collateral or business collateral was pledged. We analyze personal real estate collateral separately from business collateral because the former should directly blunt the effects of the homestead exemptions.¹²

The unlimited liability firms borrowed substantially smaller amounts and paid higher rates, but benefited on average from longer maturities. In addition, the unlimited liability firms were more likely to pledge personal real estate collateral, but less likely to pledge business collateral than their limited liability counterparts.

In the control variable selection, we include several characteristics of the firm and of the owner related to the firm's perceived creditworthiness. These characteristics are the firm's age, the owner's age, separate dummies indicating whether the firm is owned by an African-American or by another minority group, and separate dummies indicating whether the firm is female or family owned. We control for the credit history of the firm with a dummy for past bankruptcy filing, and two separate categorical variables for business and personal delinquencies. These categorical variables range from zero (no past delinquencies) to three (the owner/firm has been at least three times delinquent on personal/business obligations).

Previous research (e.g., Kallberg and Udell (2003)) suggests that the third-party mercantile ratings are strong predictors of default risk in small business lending. Accordingly, we also include the credit score percentile of the firm, as obtained from Dun & Bradstreet. The credit score is based on business information and provides a useful

¹¹ We additionally lose 145 observations in the maturity regressions because some loans have an unspecified term.

¹² Business collateral includes the following firm assets: inventory, accounts receivable, equipment, vehicles, securities, deposits, real estate, and other unspecified assets.

summary of the credit history of the firm.¹³ Other firm characteristics that we include are the number of employees, the debt-to-assets and the profit-to-assets ratios, and one-digit industry codes (the latter not shown in the tables).

There is ample evidence on the importance of the nature of the relationship between the firm and its lender on the amelioration of the information asymmetry problem in the small business credit market.¹⁴ Accordingly, we include the duration in years of the relationship the firm has had with the lender, the number of financial institutions from which the firm purchases services, and a dummy that equals one if the firm has a checking account with the lending institution.

To control for the geographic and local market conditions, we include the physical distance separating the firm from the bank, the Herfindahl-Hirschman bank deposit index of banking market concentration (HHI), and a dummy that indicates whether the firm is located in a MSA. The inclusion of the MSA variable is particularly relevant, since one should expect a large discrepancy between rural and urban areas in terms of the value of the real estate property. The MSA variable also proxies for the level

¹³ If these credit scores already incorporate the exemptions as a risk factor, then our regression models might fail to identify the effect of the exemptions on the credit market variables. We investigated further the nature of these credit scores by regressing the credit scores on the remaining characteristics of the firm and owner, and on the homestead exemptions. We found that the exemptions are not systematically related to the credit scores, and that the best predictors of these scores are the firm's age, the owner's age, the African-American minority dummy, and the business delinquency variable. The R^2 of this regression is only 14%, suggesting that the credit score may incorporate a substantial amount of potentially relevant information about the firms that we would otherwise omit.

¹⁴ Petersen and Rajan (1994, 1995), Berger and Udell (1995), Cole (1998), Angelini, Di Salvo and Ferri (1998), Harhoff and Körting (1998), Degryse and Van Cayseele (2000) analyse the effect of firm-creditor relationships on credit availability and collateral requirements, while Petersen and Rajan (1994), Berger and Udell (1995), Angelini, Di Salvo and Ferri (1998), Degryse and Cayseele (2000) and Brick and Palia (2007) focus on the effect of relationships on interest rates.

of competition in the loan market, with more active competition generally found in metropolitan markets.

Finally, in all regressions with the loan contract terms as dependent variables, we also include a set of dummies for the type of the loan – line of credit, capital lease, mortgage, motor vehicle, equipment, and other type. The inclusion of these controls permits a much cleaner interpretation of our results. For instance, there is evidence that lines of credit (which typically have higher rates and shorter maturity) are more relationship-driven than the other types of loans (Berger and Udell (1995)). Moreover, relationship lending should play a more important role in markets with higher exemptions, where agency problems are more severe. By controlling for the type of the loan, we rule out that the effect of the exemptions on the credit terms could simply reflect an adjustment in the banks' loan portfolio composition.

V. Empirical Methodology

Our main prediction is that high levels of debtor protection should adversely affect the small businesses in the credit market, and that this effect should be stronger for the unlimited liability firms. We expect, in particular, to obtain empirical support for the following set of predictions. First, increased debtor protection, all else equal, should increase the likelihood that a firm is either denied credit or discouraged from applying for credit, as greater debtor protection induces or exacerbates agency problems between the firm and its potential lenders. We test this prediction with the following probit model, which we estimate separately for unlimited liability and limited liability firms:

$$P(\text{Discouraged/Denied}) = \alpha_1 \text{Debtor Protection} + \beta_1 X + \varepsilon_1, \quad (1)$$

Where the vector X includes a constant term plus the control variables defined in the previous section (see Table 2), and ε_i is the residual term.

Second, higher debtor protection should increase the incidence of collateral for firms that receive loans, as the pledging of collateral tends to blunt the effects of increased debtor protection. However, there are at least two reasons why this effect may apply to business collateral, but not necessarily apply to the personal real estate collateral. First, it is more costly for risk-averse firm owners to pledge their real estate as collateral when the real estate is protected by the bankruptcy law. Second, there is evidence from the mortgage market of a higher cost for the bank of seizing personal collateral in high exemption states (Lin and White (2001)). The two corresponding empirical equations are given by:

$$P(\text{Collateral} - \text{Pers. real estate}) = \alpha_2 \text{Debtor Protection} + \beta_2 X + \varepsilon_2, \quad (2)$$

$$P(\text{Collateral} - \text{Bus. assets}) = \alpha_3 \text{Debtor Protection} + \beta_3 X + \varepsilon_3, \quad (3)$$

which we again estimate by probit and separately for the unlimited liability and limited liability firms. Given the above discussion, for the unlimited liability group we expect a positive α_3 and an undetermined sign for α_2 .

Third, for the unlimited liability companies the terms of credit – maturity, interest rates, and loan amounts – are expected to become harsher (shorter maturities, higher rates, lower loan amounts) as the level of debtor protection increases.

These predictions translate into the following three regressions, which we estimate separately for the unlimited liability and limited liability firms:

$$\text{Ln}(1 + \text{Loan Maturity}) = \alpha_4 \text{Debtor Protection} + \beta_4 X + \varepsilon_4, \quad (4)$$

$$\text{Loan Rate} = \alpha_5 \text{Debtor Protection} + \beta_5 X + \varepsilon_5, \quad (5)$$

$$\text{Ln}(\text{Loan Amount}) = \alpha_6 \text{Debtor Protection} + \beta_6 X + \varepsilon_6, \quad (6)$$

We use four different measures of debtor protection. The first measure pertains to the homestead exemption in the state where firm is located:

$$f_1 = \text{Ln}(1 + \text{Homestead Exemption}).$$

For states with unlimited homestead exemptions, we set *Homestead Exemption* equal to the maximum homestead exemption across all states in the same year. This assumption copes with the fact that the unlimited exemptions are never truly unlimited. The unlimited simply indicates that the law imposes a limit on the size of the property, rather than on its value. The size limit should still restrict the value of the property in an indirect fashion.

Our second measure uses an inverse transformation that explicitly takes into account the unlimited exemptions as a limiting case. In particular, we propose the functional form given by:

$$f_2 = 1 - 1/(1 + x),$$

where x corresponds to the *Homestead Exemption* scaled by its sample mean (the mean is exclusive of the unlimited exemptions). This function is bounded between zero (exemptions are zero) and one (exemptions are unlimited).¹⁵

The third measure recognizes that the homestead exemption protects a debtor only to the extent that the value of the debtor's home equity is less than or equal to the exemption level. Accordingly, we propose a more appropriate measure of debtor protection that takes into account the value of the home equity of the firm's owner. The measure is given by:

$$f_3 = -\text{Ln}(1 + \text{Max}\{\text{Home Value} - \text{Homestead Exemption}, 0\}),$$

where *Home Value* is the home equity value of the firm's owner.¹⁶ The argument in the logarithmic function (i.e., the *Max* function) is an inverse measure of debtor protection. The argument is positive when the debtor's home equity cannot be fully exempted. In this case, the creditor has a residual claim on the excess value of the property with respect to the exemption level. The maximum level of debtor's protection is attained when the value of the debtor's home equity can be fully exempted (i.e., the function equals zero). In states with unlimited exemptions, this is always the case. The minus sign that precedes the logarithmic function reverses the sign, so that the function is a direct measure of debtor protection.

¹⁵ We find this transformation appropriate since the resulting series is strongly correlated with the logarithmic functional form we used in the previous case (the correlation coefficient is 0.75). We obtained similar results when we used a logistic (or sigmoid) transformation instead. The logistic function is given by $f(x) = 1 / (1 + \exp(-x))$.

¹⁶ Only the 1998 and 2003 SSBF provide information on the extent of equity in the home of the firm owner. We imputed a value of zero for *Home Value* if the business owners did not own their home. About 7% (population estimate) of the business owners reported that they did not own their home.

Our fourth measure combines the two previous specifications, i.e., the inverse functional form with the general measure of debtor protection that takes into account the value of the owner's home equity. The fourth functional form is given by:

$$f_4 = -[1 - 1/(1 + w/s)],$$

where $w = \text{Max}\{\text{Home Value} - \text{Homestead Exemption}, 0\}$, and where s is the sample mean of w .

In our empirical analysis, we focus primarily on the economic effect of the specifications that are inclusive of the value of the owner's home equity, as these measures explicitly address the agency problems associated with the bankruptcy law – i.e., the agents' actual incentives to file for bankruptcy.

VI. Results

A. Univariate tests

Table 3 reports the means of all dependent and independent variables for high exemption states and low exemption states, and for both types of firms (unlimited and limited liability).¹⁷ Here we take as low exemption states the ones at or below the 10th percentile of the homestead exemptions each year (the critical value equals \$10,000 throughout the entire sample). We consider high exemption states the ones with unlimited exemptions and the ones at or above the 90th percentile (the critical value is \$100,000 in the 1993 and 1998 SSBF, and \$150,000 in the 2003 SSBF). The difference-

¹⁷ In the univariate tests, we choose not to use our preferred of debtor protection (inclusive of the value of the owner's home equity), since the value of the firm owner's equity in residence is not available for the 1993 NSSBF.

of-means tests show that the percentage of firms that were denied or discouraged from borrowing does not differ significantly between high and low exemption states for either type of firm. With respect to the contract terms, the only significant differences between high exemption and low exemption states are for the measures of collateral pledged for unlimited liability firms. Specifically, the percentage of unlimited liability firms that pledge business collateral is significantly higher in high exemption states, and the percentage of unlimited liability firms that pledge personal real estate collateral is significantly lower. As discussed above, the predicted effect of exemptions on personal real estate collateral is ambiguous.

Before turning to the other loan contract terms, we first investigate how the exemptions affect the credit quality of the pool of borrowers. Bankruptcy exemptions are likely to affect both the supply and demand for credit, and it is not clear *a priori* which effect should dominate. To address this point, we use the credit score information from Dun & Bradstreet that is available for all firms, whether borrowers or not, and we perform several differences-of-means tests for the unlimited liability and limited liability firms. The results are reported in Table 4. In panel A (unlimited liability firms), the pool of *borrowers* has significantly higher scores (better credit risks) in high exemption states. While a similar pattern is observed for the unlimited liability non-borrowers, the difference in the average credit score between high and low exemptions is almost four times larger for borrowers. Moreover, while in high exemption states the pool of borrowers is significantly safer than the pool of non-borrowers, this difference is not observed in low exemption states. None of these patterns is observed for limited liability companies (Panel B). These results suggest that in high exemption states a selection

mechanism based on credit quality is shaping the pool of the unlimited liability borrowers.¹⁸ They also emphasize the importance of controlling for risk characteristics, both to analyze the probability of being discouraged/denied and the determinants of the contract terms. We therefore turn to a multivariate analysis in the next Section.

B. Multivariate analysis

1. Probability of being denied credit or discouraged from borrowing

We begin by investigating whether debtor protection affects the probability of firms being denied credit or discouraged from borrowing. Table 5 reports the results of probit regressions, using our four different measures of debtor protection. We analyze this separately for limited and unlimited liability companies. As expected, for unlimited liability firms, we find a strong positive effect of an increase in the level of debtor protection on the probability of being discouraged/denied. In terms of economic significance, the probability of an unlimited liability firm being discouraged/denied increases between 6.5% and 11% if the firm is located in a state with unlimited rather than zero homestead exemptions. For our two preferred specifications the range is between 8.5% and 10%. This result is robust to different measures of debtor protection, and is consistent with our previous result on the pool of unlimited liability borrowers being significantly safer in high exemption states. Contrary to Berkowitz and White

¹⁸ However, we cannot determine precisely the nature of the selection effect. On the one hand, it may reflect an increase in credit quality requirements by banks in response to the adverse incentives on the unlimited liability firms' owners caused by the high exemptions. The significant difference in credit scores between the borrowers and non-borrowers in high exemption states supports this view. On the other hand, *all* unlimited liability firms (borrowers and non-borrowers) have substantially higher scores when they are located in high exemption states. This could be due to a survival effect – i.e., some poor credit quality firms cannot obtain credit and go out of business. Alternatively, it could also be due to the fact that mainly individuals with good credit histories become entrepreneurs in high exemption states.

(2004), we generally do not find significant effects for the limited liability group.¹⁹ This confirms our hypothesis that unlimited liability firms are the ones that face difficulties in obtaining credit when the level of debtor protection is high.

Many of our control variables turn out to be significant with the expected sign for both types of firms. Profitability, a better credit score, and a longer relationship with the bank decrease the probability of denial/discouraged. On the other hand, if the company is owned by an African-American, or if the owner/firm has been delinquent in the last three years or the firm has filed for bankruptcy in the last seven years, the probability of being credit rationed increases.

2. Contract terms

We now investigate the effect of debtor protection on the contract terms. Tables 6 to 10 report reduced-form regressions for the different contract terms, both for limited liability and unlimited liability companies.

We begin with the probability of pledging personal real estate collateral. The results are reported in Table 6. For limited liability firms, we do not find any effect of our measures of debtor protection on the probability of pledging personal collateral. For unlimited liability companies, we do find that greater debtor protection is associated with a lower probability of pledging personal real estate collateral. This result was already suggested by our univariate tests. Specifically, the probability of an unlimited liability firm pledging personal real estate collateral falls between 6.5% and 14% if the firm is

¹⁹ Berkowitz and White (2004) argue that small corporations can still be affected by exemptions as long as banks require the owners to personally guarantee their loans. We checked this conjecture by running the regression separately for loans to limited liability firms without personal guarantees, and for loans to limited liability firms with personal guarantees. We did not find any difference between the two groups, and the exemption level does not affect the probability of denial/discouraged in either group.

located in a state with unlimited rather than zero homestead exemptions. For our two preferred specifications, the range is between 7.9% and 11%. One possible explanation for the result relies on our finding that the pool of borrowers is significantly safer in high exemptions states, and banks may less often require collateral from safer borrowers. Another possible explanation is that banks in high exemption states face higher costs of seizing personal collateral.²⁰ Finally, a demand side effect could be at work, related to the different opportunity costs of pledging personal real estate collateral in high exemption versus low exemption states. For an unlimited liability company, pledging real estate collateral eliminates the possibility of getting wealth insurance only in high exemption states, increasing the opportunity cost of this strategy for a risk-averse owner in these states.

We still expect that high debtor protection increases the likelihood that the firms pledge business collateral, as collateral blunts the effect of the exemptions. Also, business collateral could be used as a substitute for personal collateral given the previous results. We therefore run the corresponding probit models and we report the results in Table 7. As expected, the probability of pledging business collateral increases with the exemptions level only for unlimited liability firms, supporting the above explanation. Specifically, the probability of an unlimited liability firm pledging business increases between 12% and 33% if the firm is located in a state with unlimited rather than zero homestead exemptions. For our two preferred specifications, the range is between 12%

²⁰ Lin and White (2001) suggest that foreclosure costs are higher if the borrower files for bankruptcy. They argue that in the context of bankruptcy, foreclosure requires approval of the bankruptcy trustee, increasing the delay and imposing higher transaction costs. Because high exemptions increase the probability that a borrower that may have other unsecured loans files for bankruptcy, exemptions may increase expected foreclosure costs for the bank. Lin and White (2001) find empirical evidence from the mortgage market that supports this argument. They find that applicants for mortgages are 2 percentage points more likely to be turned down if they live in states with unlimited rather than low homestead exemptions.

and 13%. There is no effect of exemptions on the probability of pledging any type of collateral for limited liability firms, giving further evidence that limited liability companies are not significantly affected by the exemption levels.

Table 8 reports the results for loan maturity. Similar to the results for collateral, we only find an effect of debtor protection for unlimited liability companies. As expected, high exemptions significantly reduce the maturity of the loan. The effect is economically significant: for our two preferred specifications the range of the relative decrease in maturity is between 10% and 19% if the firms are located in unlimited exemption states rather than zero exemption states. Together with the results for collateral, this suggests that banks compensate for the fact that firms are less willing to pledge personal real estate collateral by increasing the demand of business collateral and also by reducing maturity (Diamond (2004)). This result is consistent with the findings of Qian and Strahan (forthcoming), who find that that weak creditor protection reduces maturity of loans to large companies. Also, for small firms, Ortiz-Molina and Penas (forthcoming) find strong evidence that maturity increases with collateral pledges, and that personal collateral is associated with longer maturities than business collateral.

We finally focus on the remaining contract terms: loan rate and loan size. Tables 9 and 10 report the results, respectively. For loan rates, we find that greater debtor protection increases loan rates for both types of firms, although the variable turns out to be significant in only half of the cases and only for one out of four of our preferred specifications. The effect ranges between 16 and 36 basis points for our preferred specifications. In terms of economic magnitude, we cannot statistically reject the equality of the coefficients in the same specification for the limited liability and unlimited

liability firms. One possible explanation for this result is that, if most loans to limited liability companies are guaranteed, then high exemptions matter because they reduce the value of those guarantees. An alternative explanation is that the exemptions are also affecting some small limited liability firms, because the owners of these firms may transfer assets to themselves. Finally, this result could also be due to banks adopting as a general procedure to increase interest rates to all customers in high exemption states.

For loan size, we also find that debtor protection affects both types of firms. This is not surprising, giving our previous results on interest rates. Demand for and supply of bank loans should fall for all types of firms. However, the magnitude of the relative decrease in the size of the loan is nearly twice as large for the unlimited liability companies (in a range between 37% and 39% against a range between 18% and 28% for our preferred specifications), suggesting that for these firms there could be an additional reduction in their access to credit.

Finally, we address the concern that our results are driven by high exemptions being correlated with larger foreclosure costs. In fact, Pence (2006) finds that higher foreclosure costs are associated with lower loan sizes. Therefore we decide to include a variable that controls for different state foreclosure laws in all our models and specifications.²¹ Results (not reported but available upon request) remain the same for our measures of debtor protection. Interestingly, and consistent with the findings in Pence (2006), we find that higher foreclosure costs are associated with a lower probability of pledging personal collateral.

²¹ We are grateful to Karen Pence for providing the foreclosure data.

VII. Conclusion

In this paper, we study the effect of debtor protection on small firms' access to credit, and on the price and non-price terms of bank lending to these companies. Our empirical strategy exploits the variation across states of U.S. personal bankruptcy law.

We find robust evidence of a strong adverse effect of high levels of debtor protection on unlimited liability firms. Specifically, for these firms the probability of being denied credit or being discouraged from borrowing increases by about 10 percentage points in high exemption states. Consistent with this result, the pool of unlimited liability borrowers is significantly less risky in high exemption states than in low exemption states, suggesting that lenders restrict credit to these firms. Moreover, for the unlimited liability companies that do receive credit, price but mainly non-price terms are considerably less favorable in high exemption states. Specifically, both loan amounts and maturity fall significantly. We also note that while less personal real estate collateral is pledged in these circumstances, the incidence of business collateral is higher. We offer several explanations for this result. As expected, for limited liability firms we do not find a reduction in access to credit driven by greater debtor protection, though we do find some effect on the interest rates and consequently on the sizes of the loans.

Overall, the results of our paper strongly suggest that high levels of debtor protection prevent unlimited liability firms from pre-committing to harsh penalties, and therefore reduce their access to the credit market.

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Table 1 – Bankruptcy Exemptions by State in 1993, 1998, and 2003

State	Homestead Exemptions (\$)		
	1993	1998	2003
Alabama ^D	10,000	10,000	10,000
Alaska	54,000	62,000	67,500
Arizona	100,000	100,000	100,000
Arkansas	Unlimited	Unlimited	Unlimited
California ^D	75,000	75,000	75,000
Colorado ^D	60,000	60,000	90,000
Connecticut ^D	150,000	150,000	150,000
D.C. ^{F, D}	30,000	32,300	36,900
Delaware	0	0	0
Florida	Unlimited	Unlimited	Unlimited
Georgia ^D	10,000	10,000	20,000
Hawaii ^{F, D}	30,000	32,300	36,900
Idaho	50,000	50,000	50,000
Illinois ^D	15,000	15,000	15,000
Indiana ^D	15,000	15,000	15,000
Iowa	Unlimited	Unlimited	Unlimited
Kansas	Unlimited	Unlimited	Unlimited
Kentucky ^D	10,000	10,000	10,000
Louisiana	15,000	25,000	25,000
Maine ^D	25,000	25,000	70,000
Maryland	0	0	0
Massachusetts	100,000	100,000	500,000
Michigan ^{F, D}	30,000	32,300	36,900
Minnesota	Unlimited	Unlimited	Unlimited
Mississippi ^D	150,000	150,000	150,000
Missouri	8,000	8,000	15,000
Montana ^D	80,000	120,000	200,000
Nebraska	20,000	12,500	12,500
Nevada	95,000	125,000	200,000
New Hampshire ^D	60,000	60,000	200,000
New Jersey ^{F, D}	30,000	32,300	36,900
New Mexico ^D	60,000	60,000	60,000
New York ^D	20,000	20,000	20,000
North Carolina ^D	20,000	20,000	20,000
North Dakota	80,000	80,000	80,000
Ohio ^D	10,000	10,000	10,000
Oklahoma	Unlimited	Unlimited	Unlimited
Oregon ^D	33,000	33,000	33,000
Pennsylvania ^{F, D}	30,000	32,300	36,900
Rhode Island	30,000	32,300	200,000

State	Homestead Exemptions (\$)		
	1993	1998	2003
South Carolina ^{F, D}	30,000	32,300	36,900
South Dakota	Unlimited	Unlimited	Unlimited
Tennessee ^D	7,500	7,500	7,500
Texas	Unlimited	Unlimited	Unlimited
Utah ^D	10,000	40,000	40,000
Vermont ^D	60,000	150,000	150,000
Virginia ^D	10,000	10,000	10,000
Washington	60,000	40,000	40,000
West Virginia ^D	15,000	30,000	50,000
Wisconsin	40,000	40,000	40,000
Wyoming ^D	20,000	20,000	20,000
Median	30,000	32,300	36,900

Source: Elias, Renauer, and Leonard (1993, 1998 and 2004).

^F Indicates that the Federal exemption was selected.

^D Indicates that the exemption was doubled. In some states married couples are allowed to double the amount of the exemption for home equity when filing for bankruptcy together (called “doubling”). We have doubled all amounts except in those cases where bankruptcy law explicitly prohibits “doubling.”

Note: In the states with unlimited exemptions there is a limit on the physical size of the property, rather than on the value of the property.

Table 2 – Descriptive Statistics for Unlimited Liability and Limited Liability Firms

The unlimited liability group includes sole proprietorships and partnerships with this legal form. The limited liability group contains all corporations (both regular and S-type), plus the sole proprietorships and partnerships that have a limited liability form.

Variable	Unlimited Liability		Limited Liability	
	Mean	Std. dev.	Mean	Std. dev.
<i>Defined for all firms</i>				
Discouraged/Denied (0/1)	0.23	0.42	0.23	0.42
Homestead exemption (\$000)	92.37	121.46	91.85	130.15
African-American owned (0/1)	0.04	0.20	0.026	0.16
Other minority owned (0/1)	0.05	0.23	0.055	0.23
Female owned (0/1)	0.29	0.46	0.28	0.45
Owner's age (years)	50.00	11.00	51.00	11.00
Number of employees	3.90	9.90	14.00	30.00
Family owned (0/1)	0.95	0.23	0.82	0.39
Firm's age (years)	14.00	11.00	14.00	11.00
Debt/assets ratio	0.61	7.00	1.10	11.00
Profits/assets ratio	4.30	82.00	27.00	1056.00
Past bankruptcy filing (0/1)	0.03	0.17	0.02	0.14
Firm credit score (1-100)	50.00	27.00	54.00	30.00
Past business delinquency (0-3)	0.33	0.87	0.46	1.00
Past personal delinquency (0-3)	0.34	0.88	0.25	0.78
Checking account at bank (0/1)	0.84	0.37	0.83	0.38
Length of relationship (years)	8.90	8.80	8.40	8.90
Number of lenders	2.00	1.30	2.50	1.60
Distance to lender (miles)	37.00	204.00	47.00	272.00
HHI deposit market (0-1)	0.21	0.12	0.19	0.10
Firm in MSA (0/1)	0.76	0.43	0.83	0.37
<i>Number of Observations</i>	4,574		7,362	
<i>Defined for borrowers</i>				
Collateral – Business assets (0/1)	0.41	0.49	0.52	0.50
Collateral – Personal real estate (0/1)	0.15	0.36	0.11	0.31
Loan rate	0.86	0.32	0.75	0.29
Floating rate (%)	0.32	0.47	0.49	0.50
Loan size (\$000)	132.31	1,199.02	380.10	1,804.61
Loan maturity (years)	4.90	6.20	3.80	5.10
<i>Number of Observations</i> ^a	989		3,194	

^a The number of observations for the variable Loan maturity is 943 (Unlimited liability) and 3,095 (Limited liability). The missing observations pertain to loans with unspecified maturity.

Table 3 – Descriptive Statistics for Unlimited Liability vs. Limited Liability firms, and for High vs. Low Homestead Exemptions

Low exemptions refer to the homestead exemptions that are for each year at or below the 10th percentile, which equals \$10,000 throughout the entire sample. High exemptions refer to the unlimited exemptions and to the homestead exemptions that are for each year at or above the 90th percentile. The 90th percentile of the homestead exemptions is \$100,000 in the 1993 and 1998 SSBF, and \$150,000 in the 2003 SSBF. The symbols ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Variable	Unlimited Liability					Limited Liability				
	<i>Low Exemption</i>		<i>High Exemption</i>		Difference <i>Low-High</i>	<i>Low Exemption</i>		<i>High Exemption</i>		Difference <i>Low-High</i>
	Mean	Std. dev.	Mean	Std. dev.		Mean	Std. dev.	Mean	Std. dev.	
<i>Defined for all firms</i>										
Discouraged/Denied (0/1)	0.23	0.42	0.26	0.44	-0.03	0.23	0.42	0.23	0.42	0.00
African-American owned (0/1)	0.07	0.25	0.04	0.18	0.03***	0.04	0.20	0.02	0.14	0.02**
Other minority owned (0/1)	0.04	0.19	0.06	0.23	-0.02**	0.04	0.19	0.06	0.23	-0.02**
Female owned (0/1)	0.26	0.44	0.29	0.45	-0.03	0.27	0.44	0.26	0.44	0.01
Owner's age (years)	50.00	11.00	51.00	12.00	-1.00*	50.00	11.00	50.00	11.00	0.00
Number of employees	3.80	9.20	3.60	9.00	0.20	14.00	29.00	13.00	29.00	1.00
Family owned (0/1)	0.95	0.22	0.95	0.22	0.00	0.82	0.38	0.81	0.39	0.01
Firm's age (years)	14.00	11.00	14.00	12.00	0.00	14.00	12.00	13.00	11.00	1.00**
Debt/assets ratio	0.38	0.96	0.56	2.00	-0.18***	1.30	19.00	1.40	12.00	-0.10
Profits/assets ratio	4.00	44.00	2.50	23.00	1.50	8.40	158.00	5.50	76.00	2.90
Past bankruptcy filing (0/1)	0.04	0.20	0.03	0.18	0.01	0.03	0.16	0.02	0.14	0.01**
Firm credit score (1-100)	47.00	27.00	49.00	26.00	-2.00	54.00	30.00	53.00	29.00	1.00
Past business delinquency (0-3)	0.37	0.92	0.32	0.87	0.05**	0.42	0.98	0.50	1.10	-0.08
Past personal delinquency (0-3)	0.34	0.89	0.34	0.88	0.00	0.22	0.75	0.28	0.81	-0.06
Checking account at bank (0/1)	0.84	0.37	0.84	0.37	0.00	0.83	0.38	0.82	0.38	0.01
Length of relationship (years)	9.10	8.80	8.50	8.50	0.60	8.40	9.30	7.90	8.50	0.50
Number of lenders	1.90	1.30	2.00	1.30	-0.10*	2.60	1.60	2.60	1.60	0.00
Distance to lender (miles)	32.00	159.00	39.00	213.00	-7.00	31.00	154.00	52.00	241.00	-21.00***
HHI deposit market (0-1)	0.20	0.40	0.22	0.41	-0.02	0.18	0.38	0.19	0.39	-0.01

	Unlimited Liability					Limited Liability				
Variable	<i>Low Exemption</i>		<i>High Exemption</i>		Difference <i>Low-High</i>	<i>Low Exemption</i>		<i>High Exemption</i>		Difference <i>Low-High</i>
	Mean	Std. dev.	Mean	Std. dev.		Mean	Std. dev.	Mean	Std. dev.	
Firm in MSA (0/1)	0.71	0.45	0.77	0.42	-0.06***	0.81	0.39	0.85	0.36	-0.04
<i>Number of Observations</i>	676		1,528			1,318		2,193		
<i>Defined for borrowers</i>										
Collateral – Business assets (0/1)	0.37	0.48	0.46	0.50	-0.09***	0.55	0.50	0.56	0.50	-0.01
Collateral – Personal real estate (0/1)	0.13	0.34	0.09	0.29	0.04***	0.10	0.30	0.09	0.29	0.01*
Loan rate	8.40	3.00	8.70	2.90	-0.30	7.60	2.60	7.80	2.70	-0.20
Floating rate (0/1)	0.32	0.47	0.33	0.47	-0.01	0.49	0.50	0.46	0.50	0.03*
Loan size (\$000)	144.20	531.11	156.98	1,797.54	-12.78	286.20	1,470.51	395.30	1,860.50	-109.10
Loan maturity (years)	4.70	5.30	4.50	6.40	0.20	3.90	4.80	3.90	5.80	0.00
<i>Number of Observations</i> ^b	152		315			579		951		

^b For loan maturity we have 150, 301, 559 and 923 observations, in the same order as shown in the table. The missing observations pertain to loans with unspecified maturity.

Table 4 – The Effect of the Homestead Exemptions on Credit Quality

The table displays the average firm credit scores for borrowers and non-borrowers, in high versus low exemption states, for the unlimited liability and limited liability firms. Low exemptions refer to the homestead exemptions that are for each year at or below the 10th percentile, which equals \$10,000 throughout the entire sample. High exemptions refer to the unlimited exemptions and to the homestead exemptions that are for each year at or above the 90th percentile. The 90th percentile of the homestead exemptions is \$100,000 in the 1993 and 1998 SSBF, and \$150,000 in the 2003 SSBF. Standard errors are provided in parentheses. All statistics take into account the sample weights, implying that all the statistics are representative of the population of U.S. small businesses.

Subsamples	(A) All firms	(B) Borrowers	(C) Non-Borrowers	Difference (C) - (B)
<i>A) Unlimited Liability</i>				
(I) All Firms	49.58 (0.46) N=4,574	50.42 (1.08) N=989	49.36 (0.51) N=3,585	-1.07 (1.20)
(II) Low Exemptions	46.65 (1.24) N=676	46.34 (2.71) N=152 ^c	46.74 (1.39) N=524	0.40 (3.04)
(III) High Exemptions	49.33 (0.78) N=1,528	52.64 (1.71) N=315 ^d	48.50 (0.88) N=1,213	-4.14** (1.92)
Difference (III) - (II)	2.68* (1.47)	6.30** (3.20)	1.76 (1.65)	
<i>B) Limited Liability</i>				
(I) All Firms	53.71 (0.49) N=7,362	54.20 (0.83) N=3,194	53.46 (0.60) N=4,168	-0.74 (1.02)
(II) Low Exemptions	54.39 (1.16) N=1,318	53.43 (1.90) N=579	54.92 (1.45) N=739	1.49 (2.40)
(III) High Exemptions	52.50 (0.88) N=2,193	54.00 (1.58) N=951	51.70 (1.06) N=1,242	-2.30 (1.90)
Difference (III) - (II)	-1.89 (1.46)	0.56 (2.48)	-3.22* (1.80)	

^c Representative of more than 245,000 U.S. small businesses.

^d Representative of more than 500,000 U.S. small businesses.

Table 5 – The Effect of the Homestead Exemptions on the Likelihood of *Discouraged/Denied*

The table lists the coefficients from a probit regression of *Discouraged/Denied* on the set of variables reported. The model also includes (estimates not shown) year dummies and one-digit SIC dummies. In the first specification, $\text{Ln}(1+\text{Homestead exemption})$, we impute for the unlimited exemptions the maximum homestead exemption in the same period. *Inverse homestead exemption* refers to the functional form: $f(x)=1-(1/(1+x))$, where x is the homestead exemption scaled by its sample mean (sample mean is exclusive the unlimited exemptions). *Adjusted exemption* is given by: $-\text{Ln}(1+\max\{z,0\})$, where z is the home equity value of the firm's owner minus the homestead exemption. The *Inverse adjusted exemption* refers to the functional form: $f(w)$, where $w=\max\{z,0\}$, and where w is scaled by its sample mean. The row *Effect Δ exemptions (0-Unlim.)* refers to the predicted change in probability of the dependent variable that results from changing the exemption level from zero to unlimited. The effect was calculated at the mean value of the other independent variables. For the first specification (columns 1 and 5) we set the unlimited exemption to the maximum exemption level in the 1998 SSBF (\$200,000). For the specifications that use the adjusted exemptions (columns 3, 4, 7, and 8), we set the value of the home equity to its sample median (equals \$80,000 for the unlimited liability firms, and \$140,000 for the limited liability firms). The dataset comprises the 1993, 1998 and 2003 SSBF. The third and fourth specifications (columns 3, 4, 7, and 8) use only data from the 1998 and 2003 SSBF because the home equity value is not available for 1993. The standard errors were clustered at the state level. Robust t statistics are provided in parentheses. The symbols ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Variable	Unlimited Liability				Limited Liability			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\text{Ln}(1+\text{Homestead exemption})$	0.040*** (3.21)				-0.0049 (-0.48)			
Inverse homestead exemption		0.24*** (3.10)				-0.093 (-0.90)		
Adjusted exemption			0.037*** (5.58)				0.0065 (1.05)	
Inverse adjusted exemption				0.81*** (5.88)				0.28* (1.84)
<i>Effect Δ exemptions (0-Unlim.)</i>	0.11***	0.065***	0.10***	0.085***	-0.016	-0.025	0.018	0.032*
African-American owned	0.70** (6.70)	0.69*** (6.73)	0.60*** (4.40)	0.59*** (4.33)	0.55*** (5.12)	0.54*** (5.11)	0.54*** (3.86)	0.54*** (3.78)
Other minority owned	0.046 (0.54)	0.039 (0.45)	0.033 (0.28)	0.039 (0.33)	0.17** (2.35)	0.17** (2.36)	0.20** (2.23)	0.20** (2.23)
Female owned	0.052 (0.85)	0.054 (0.88)	0.13* (1.71)	0.13* (1.68)	0.073 (1.21)	0.073 (1.21)	0.055 (0.80)	0.051 (0.75)
$\text{Ln}(\text{Owner's age})$	-0.46*** (-4.43)	-0.46*** (-4.39)	-0.50*** (-3.47)	-0.46*** (-3.16)	-0.27*** (-2.63)	-0.27*** (-2.59)	-0.33** (-2.46)	-0.29** (-2.01)
$\text{Ln}(1+\text{Number of employees})$	-0.085 (-1.36)	-0.084 (-1.34)	-0.084 (-1.22)	-0.071 (-1.03)	-0.16*** (-4.87)	-0.16*** (-4.83)	-0.15*** (-4.28)	-0.14*** (-4.28)
Family owned	0.17 (1.53)	0.17 (1.49)	0.11 (0.68)	0.085 (0.53)	0.066 (1.32)	0.068 (1.36)	0.12** (2.18)	0.12** (2.06)
$\text{Ln}(1+\text{Firm's age})$	-0.094**	-0.093**	-0.064	-0.060	-0.100**	-0.10***	-0.096**	-0.093**

Variable	Unlimited Liability				Limited Liability			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Debt/assets ratio	(-2.25) -0.0043*	(-2.23) -0.0042*	(-1.23) -0.0042*	(-1.17) -0.0038	(-2.56) 0.0044**	(-2.61) 0.0045**	(-2.21) 0.0039**	(-2.12) 0.0037**
Profits/assets ratio	(-1.87) -0.0013**	(-1.85) -0.0014**	(-1.72) -0.0012	(-1.53) -0.0013	(2.47) -0.00071**	(2.50) -0.00072**	(2.15) -0.00067*	(2.06) -0.00066*
Past bankruptcy filing	(-2.05) 1.17***	(-2.09) 1.16***	(-1.44) 1.15***	(-1.48) 1.13***	(-2.10) 0.92***	(-2.12) 0.92***	(-1.95) 0.75***	(-1.93) 0.74***
Firm credit score	(6.67) -0.0065***	(6.65) -0.0065***	(5.34) -0.0076***	(5.12) -0.0073***	(5.40) -0.0069***	(5.40) -0.0069***	(3.54) -0.0072***	(3.44) -0.0072***
Past business delinquency	(-6.50) 0.21**	(-6.44) 0.21**	(-6.06) 0.19**	(-5.96) 0.19**	(-9.41) 0.23**	(-9.43) 0.23**	(-7.46) 0.25**	(-7.53) 0.24**
Past personal delinquency	(6.74) 0.28**	(6.75) 0.28**	(5.50) 0.30**	(5.62) 0.29**	(8.14) 0.27**	(8.16) 0.27**	(9.70) 0.29**	(9.54) 0.28**
Checking account at bank	(9.92) -0.11	(9.97) -0.11	(9.12) -0.056	(8.95) -0.058	(8.56) -0.26***	(8.58) -0.26***	(6.86) -0.28***	(6.82) -0.28***
Ln(1+Length of relationship)	(-1.60) -0.11**	(-1.61) -0.11**	(-0.59) -0.11**	(-0.61) -0.12**	(-4.41) -0.10***	(-4.45) -0.10***	(-3.63) -0.11***	(-3.56) -0.11***
Number of lenders	(-2.52) 0.13**	(-2.51) 0.13***	(-2.08) 0.17***	(-2.17) 0.17***	(-3.83) 0.081***	(-3.83) 0.081***	(-3.35) 0.099***	(-3.39) 0.099***
Ln(1+Distance to lender)	(4.47) 0.022	(4.46) 0.022	(4.29) 0.036	(4.35) 0.035	(4.20) -0.0073	(4.24) -0.0067	(4.44) -0.0022	(4.47) -0.0023
HHI deposit market	(0.77) -0.57*	(0.77) -0.55*	(1.19) -0.71**	(1.16) -0.74**	(-0.44) 0.44	(-0.41) 0.45	(-0.11) 0.42	(-0.11) 0.43
Firm in MSA	(-1.88) 0.080	(-1.85) 0.079	(-2.04) 0.026	(-2.15) 0.035	(1.35) 0.20***	(1.41) 0.21***	(1.13) 0.18**	(1.12) 0.19**
	(1.31)	(1.30)	(0.29)	(0.38)	(3.01)	(3.05)	(2.01)	(2.08)
Observations	4,572	4,572	3,012	3,012	7,363	7,363	4,959	4,959
Pseudo R-squared	0.22	0.22	0.24	0.24	0.21	0.21	0.22	0.23

Table 6 - The Effect of the Homestead Exemptions on the Likelihood that Personal Real Estate Collateral is Pledged

The table lists the coefficients from a probit regression of *Collateral – Personal real estate* on the set of variables reported. The model also includes (estimates not shown) year dummies, one-digit SIC dummies, and dummies for the type of the loan. In the first specification, *Ln(1+Homestead exemption)*, we impute for the unlimited exemptions the maximum homestead exemption in the same period. *Inverse homestead exemption* refers to the functional form: $f(x)=1-(1/(1+x))$, where x is the homestead exemption scaled by its sample mean (sample mean is exclusive the unlimited exemptions). *Adjusted exemption* is given by: $-Ln(1+max\{z,0\})$, where z is the value of the home equity of the firm's owner minus the homestead exemption. The *Inverse adjusted exemption* refers to the functional form: $f(w)$, where $w=max\{z,0\}$, and where w is scaled by its sample mean. The row *Effect Δ exemptions (0-Unlim.)* refers to the predicted change in probability of the dependent variable that results from changing the exemption level from zero to unlimited. The effect was calculated at the mean value of the other independent variables. For the first specification (columns 1 and 5) we set the unlimited exemption to the maximum exemption level in the 1998 SSBF (\$200,000). For the specifications that use the adjusted exemptions (columns 3, 4, 7, and 8), we set the value of the home equity to its sample median (equals \$80,000 for the unlimited liability firms, and \$140,000 for the limited liability firms). The dataset comprises the 1993, 1998 and 2003 SSBF. The third and fourth specifications (columns 3, 4, 7, and 8) use only data from the 1998 and 2003 SSBF because the home equity value is not available for 1993. The standard errors were clustered at the state level. Robust t statistics are provided in parentheses. The symbols ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Variable	Unlimited Liability				Limited Liability			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln(1+Homestead exemption)	-0.068* (-1.78)				-0.0085 (-0.29)			
Inverse homestead exemption		-0.58* (-1.91)				-0.19 (-0.95)		
Adjusted exemption			-0.055*** (-3.37)				-0.0068 (-0.61)	
Inverse adjusted exemption				-1.00*** (-3.88)				0.053 (0.25)
<i>Effect Δ exemptions (0-Unlim.)</i>	<i>-0.14*</i>	<i>-0.065*</i>	<i>-0.11***</i>	<i>-0.079***</i>	<i>-0.013</i>	<i>-0.023</i>	<i>-0.022</i>	<i>-0.0033</i>
African-American owned	0.0089 (0.030)	-0.00012 (-0.00039)	0.33 (0.85)	0.28 (0.67)	0.19 (0.91)	0.18 (0.87)	0.13 (0.39)	0.13 (0.37)
Other minority owned	-0.058 (-0.16)	-0.020 (-0.055)	-0.18 (-0.29)	-0.24 (-0.38)	-0.22 (-0.97)	-0.22 (-0.99)	-0.29 (-1.12)	-0.28 (-1.09)
Female owned	-0.018 (-0.14)	-0.012 (-0.094)	0.097 (0.53)	0.047 (0.25)	0.14 (1.41)	0.14 (1.40)	0.090 (0.74)	0.083 (0.69)
Ln(Owner's age)	-0.28 (-0.88)	-0.30 (-0.95)	-0.73* (-1.73)	-0.66 (-1.56)	-0.14 (-0.65)	-0.14 (-0.65)	-0.16 (-0.54)	-0.12 (-0.41)
Ln(1+Number of employees)	-0.14 (-1.61)	-0.14 (-1.63)	-0.31** (-2.45)	-0.34*** (-2.64)	-0.041 (-0.87)	-0.041 (-0.87)	-0.032 (-0.54)	-0.024 (-0.41)
Family owned	0.15 (0.75)	0.16 (0.77)	0.64 (1.36)	0.73 (1.46)	0.39*** (3.30)	0.40*** (3.42)	0.34*** (2.22)	0.34*** (2.21)
Ln(1+Firm's age)	0.23**	0.23**	0.27**	0.21	0.031	0.033	0.072	0.072

Variable	Unlimited Liability				Limited Liability			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Debt/assets ratio	(2.05) 0.031 (1.43)	(2.05) 0.032 (1.50)	(2.00) 0.042** (2.18)	(1.61) 0.037* (1.90)	(0.44) 0.040** (2.04)	(0.47) 0.041** (2.05)	(0.87) 0.040** (1.98)	(0.85) 0.039** (1.96)
Profits/assets ratio	-0.016 (-1.38)	-0.015 (-1.31)	-0.025 (-1.21)	-0.024 (-1.12)	-0.013 (-1.47)	-0.013 (-1.44)	-0.012 (-1.37)	-0.013 (-1.41)
Past bankruptcy filing	0.43 (1.12)	0.43 (1.11)	-0.83* (-1.85)	-0.79* (-1.81)	0.20 (0.55)	0.22 (0.58)	0.81* (1.77)	0.81* (1.78)
Firm credit score	-0.00034 (-0.19)	-0.00063 (-0.35)	-0.0033 (-1.14)	-0.0034 (-1.24)	-0.0011 (-0.76)	-0.0011 (-0.78)	-0.0025 (-1.29)	-0.0025 (-1.28)
Past business delinquency	0.023 (0.28)	0.010 (0.12)	0.070 (0.68)	0.082 (0.75)	-0.074 (-1.52)	-0.073 (-1.51)	-0.10** (-2.00)	-0.11** (-2.09)
Past personal delinquency	0.041 (0.41)	0.043 (0.44)	-0.070 (-0.58)	-0.096 (-0.77)	0.013 (0.16)	0.014 (0.16)	-0.17** (-2.26)	-0.17** (-2.32)
Checking account at bank	-0.30* (-1.79)	-0.31* (-1.80)	-0.70*** (-2.61)	-0.69*** (-2.62)	-0.093 (-0.77)	-0.093 (-0.77)	-0.20 (-1.48)	-0.20 (-1.49)
Ln(1+Length of relationship)	-0.036 (-0.53)	-0.031 (-0.45)	0.079 (0.81)	0.087 (0.88)	-0.070 (-1.44)	-0.072 (-1.50)	-0.065 (-1.07)	-0.067 (-1.10)
Number of lenders	-0.063 (-1.26)	-0.056 (-1.12)	-0.054 (-0.74)	-0.048 (-0.66)	0.012 (0.39)	0.012 (0.40)	-0.0045 (-0.13)	-0.0056 (-0.17)
Ln(1+Distance to lender)	-0.0069 (-0.26)	-0.0077 (-0.29)	-0.033 (-0.85)	-0.036 (-0.83)	-0.046* (-1.79)	-0.045* (-1.75)	-0.067** (-2.17)	-0.068** (-2.23)
HHI deposit market	-0.71 (-1.25)	-0.62 (-1.09)	-0.91 (-1.38)	-1.02 (-1.48)	0.80* (1.72)	0.81* (1.74)	0.097 (0.19)	0.11 (0.20)
Firm in MSA	-0.068 (-0.44)	-0.033 (-0.22)	0.044 (0.25)	-0.028 (-0.15)	0.10 (0.70)	0.11 (0.74)	-0.070 (-0.36)	-0.069 (-0.35)
Observations	989	989	633	633	3,194	3,194	2,155	2,155
Pseudo R-squared	0.17	0.17	0.28	0.28	0.11	0.12	0.15	0.15

Table 7 - The Effect of the Homestead Exemptions on the Likelihood that Business Collateral is Pledged

The table lists the coefficients from a probit regression of *Collateral - Business assets* on the set of variables reported. The model also includes (estimates not shown) year dummies, one-digit SIC dummies, and dummies for the type of the loan. In the first specification, *Ln(1+Homestead exemption)*, we impute for the unlimited exemptions the maximum homestead exemption in the same period. *Inverse homestead exemption* refers to the functional form: $f(x)=1-(1/(1+x))$, where x is the homestead exemption scaled by its sample mean (sample mean is exclusive the unlimited exemptions). *Adjusted exemption* is given by: $-Ln(1+max\{z,0\})$, where z is the value of the home equity of the firm's owner minus the homestead exemption. The *Inverse adjusted exemption* refers to the functional form: $f(w)$, where $w=max\{z,0\}$, and where w is scaled by its sample mean. The row *Effect Δ exemptions (0-Unlim.)* refers to the predicted change in probability of the dependent variable that results from changing the exemption level from zero to unlimited. The effect was calculated at the mean value of the other independent variables. For the first specification (columns 1 and 5) we set the unlimited exemption to the maximum exemption level in the 1998 SSBF (\$200,000). For the specifications that use the adjusted exemptions (columns 3, 4, 7, and 8), we set the value of the home equity to its sample median (equals \$80,000 for the unlimited liability firms, and \$140,000 for the limited liability firms). The dataset comprises the 1993, 1998 and 2003 SSBF. The third and fourth specifications (columns 3, 4, 7, and 8) use only data from the 1998 and 2003 SSBF because the home equity value is not available for 1993. The standard errors were clustered at the state level. Robust t statistics are provided in parentheses. The symbols ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Variable	Unlimited Liability				Limited Liability			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln(1+Homestead exemption)	0.079** (2.41)				0.018 (1.00)			
Inverse homestead exemption		0.46*** (2.69)				0.15 (1.05)		
Adjusted exemption			0.030** (2.45)				0.0035 (0.38)	
Inverse adjusted exemption				0.76*** (3.21)				0.23 (1.34)
<i>Effect Δ exemptions (0-Unlim.)</i>	<i>0.33**</i>	<i>0.18***</i>	<i>0.13**</i>	<i>0.12***</i>	<i>0.088</i>	<i>0.056</i>	<i>0.016</i>	<i>0.042</i>
African-American owned	-0.77*** (-2.61)	-0.76*** (-2.63)	-1.16*** (-2.78)	-1.19*** (-2.78)	0.25 (1.09)	0.24 (1.04)	0.086 (0.28)	0.079 (0.26)
Other minority owned	-0.24* (-1.89)	-0.26** (-2.03)	-0.30 (-1.61)	-0.27 (-1.36)	0.24* (1.92)	0.24* (1.93)	0.31** (2.49)	0.31** (2.51)
Female owned	-0.40** (-2.31)	-0.40** (-2.35)	-0.42** (-2.00)	-0.40* (-1.93)	-0.13* (-1.74)	-0.13* (-1.73)	-0.15* (-1.90)	-0.16** (-2.00)
Ln(Owner's age)	-0.084 (-0.25)	-0.084 (-0.25)	-0.15 (-0.41)	-0.15 (-0.40)	0.21 (1.32)	0.21 (1.31)	0.21 (0.92)	0.25 (1.09)
Ln(1+Number of employees)	0.11 (1.31)	0.12 (1.39)	0.054 (0.56)	0.074 (0.76)	0.15*** (4.61)	0.15*** (4.61)	0.14*** (3.17)	0.15*** (3.41)
Family owned	-0.015 (-0.082)	-0.021 (-0.11)	-0.080 (-0.35)	-0.11 (-0.49)	-0.14 (-1.48)	-0.14 (-1.52)	-0.16 (-1.56)	-0.17 (-1.56)
Ln(1+Firm's age)	0.13	0.13	0.20**	0.23**	0.017	0.017	0.019	0.022

Variable	Unlimited Liability				Limited Liability			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Debt/assets ratio	(1.53) -0.029 (-1.00)	(1.57) -0.029 (-1.00)	(2.18) -0.029 (-1.00)	(2.53) -0.027 (-0.94)	(0.28) -0.019 (-1.29)	(0.29) -0.019 (-1.30)	(0.28) -0.022 (-1.46)	(0.32) -0.023 (-1.50)
Profits/assets ratio	-0.0042 (-0.63)	-0.0044 (-0.65)	-0.0034 (-0.55)	-0.0039 (-0.63)	-0.000067*** (-2.87)	-0.000066*** (-2.99)	-0.000069*** (-3.35)	-0.000069*** (-3.27)
Past bankruptcy filing	0.24 (0.55)	0.24 (0.55)	0.12 (0.22)	0.074 (0.13)	0.0030 (0.0089)	-0.0088 (-0.026)	0.22 (0.38)	0.21 (0.37)
Firm credit score	-0.0033** (-2.23)	-0.0031** (-2.13)	-0.0053*** (-2.76)	-0.0050*** (-2.72)	-0.0014 (-1.01)	-0.0015 (-1.04)	-0.0014 (-0.91)	-0.0014 (-0.91)
Past business delinquency	0.040 (0.76)	0.047 (0.88)	0.076 (0.98)	0.076 (0.97)	0.023 (0.59)	0.022 (0.56)	0.014 (0.32)	0.011 (0.25)
Past personal delinquency	-0.098 (-1.11)	-0.099 (-1.10)	-0.12 (-1.17)	-0.11 (-1.11)	0.048 (0.77)	0.049 (0.78)	0.075 (1.08)	0.074 (1.06)
Checking account at bank	0.022 (0.16)	0.028 (0.21)	0.026 (0.14)	0.039 (0.21)	0.19* (1.85)	0.19* (1.83)	0.22* (1.82)	0.22* (1.81)
Ln(1+Length of relationship)	-0.17** (-2.51)	-0.18*** (-2.71)	-0.21*** (-2.88)	-0.21*** (-2.94)	-0.032 (-0.70)	-0.030 (-0.65)	0.0038 (0.075)	0.0027 (0.053)
Number of lenders	-0.050* (-1.66)	-0.053* (-1.75)	-0.018 (-0.46)	-0.019 (-0.51)	0.057*** (2.97)	0.056*** (2.97)	0.064** (2.47)	0.064** (2.47)
Ln(1+Distance to lender)	0.0073 (0.24)	0.0086 (0.29)	-0.0037 (-0.096)	0.0017 (0.045)	0.011 (0.50)	0.011 (0.50)	0.026 (1.09)	0.026 (1.07)
HHI deposit market	0.062 (0.11)	0.043 (0.076)	-0.035 (-0.061)	-0.045 (-0.078)	0.0082 (0.019)	0.012 (0.027)	0.094 (0.18)	0.13 (0.25)
Firm in MSA	-0.21 (-1.55)	-0.22 (-1.64)	-0.13 (-0.93)	-0.10 (-0.70)	-0.13 (-1.35)	-0.13 (-1.36)	-0.14 (-1.02)	-0.13 (-0.96)
Observations	989	989	633	633	3,194	3,194	2,155	2,155
Pseudo R-squared	0.23	0.23	0.21	0.22	0.14	0.14	0.13	0.13

Table 8 – The Effect of the Homestead Exemptions on Loan Maturity

The table lists the coefficients from a linear regression of $\ln(1 + \text{Loan maturity})$ on the set of variables reported. The model also includes (estimates not shown) year dummies, one-digit SIC dummies, and dummies for the type of the loan. In the first specification, $\ln(1 + \text{Homestead exemption})$, we impute for the unlimited exemptions the maximum homestead exemption in the same period. *Inverse homestead exemption* refers to the functional form: $f(x) = 1 - (1/(1+x))$, where x is the homestead exemption scaled by its sample mean (sample mean is exclusive the unlimited exemptions). *Adjusted exemption* is given by: $-\ln(1 + \max\{z, 0\})$, where z is the value of the home equity of the firm's owner minus the homestead exemption. The *Inverse adjusted exemption* refers to the functional form: $f(w)$, where $w = \max\{z, 0\}$, and where w is scaled by its sample mean. The row *Effect Δ exemptions (0-Unlim.)* refers to the predicted change in probability of the dependent variable that results from changing the exemption level from zero to unlimited. The effect was calculated at the mean value of the other independent variables. For the first specification (columns 1 and 5) we set the unlimited exemption to the maximum exemption level in the 1998 SSBF (\$200,000). In the calculation of these effects for the specifications that use the adjusted exemptions (columns 3, 4, 7, and 8), we set the value of the home equity to its sample median (equals \$80,000 for the unlimited liability firms, and \$140,000 for the limited liability firms). The dataset comprises the 1993, 1998 and 2003 SSBF. The third and fourth specifications (columns 3, 4, 7, and 8) use only data from the 1998 and 2003 SSBF because the home equity value is not available for 1993. The standard errors were clustered at the state level. Robust t statistics are provided in parentheses. The symbols ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Variable	Unlimited Liability				Limited Liability			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\ln(1 + \text{Homestead exemption})$	-0.037*** (-2.70)				0.0055 (0.78)			
Inverse homestead exemption		-0.23*** (-2.82)				-0.012 (-0.19)		
Adjusted exemption			-0.017*** (-2.78)				-0.00043 (-0.11)	
Inverse adjusted exemption				-0.25* (-1.84)				0.085 (1.32)
<i>Effect Δ exemptions (0-Unlim.)</i>	-0.46***	-0.23***	-0.19***	-0.10*	0.067	-0.012	-0.0052	0.04
African-American owned	0.033 (0.36)	0.027 (0.29)	0.058 (0.42)	0.065 (0.49)	0.096 (1.41)	0.087 (1.25)	0.084 (0.89)	0.079 (0.86)
Other minority owned	-0.087 (-0.95)	-0.075 (-0.76)	-0.11 (-0.75)	-0.13 (-0.90)	0.082 (1.50)	0.083 (1.53)	0.087 (1.42)	0.087 (1.42)
Female owned	0.088 (1.50)	0.086 (1.47)	0.049 (0.79)	0.045 (0.70)	0.063 (1.44)	0.063 (1.44)	0.056 (1.08)	0.050 (0.97)
$\ln(\text{Owner's age})$	0.12 (0.86)	0.13 (0.87)	0.17 (1.02)	0.19 (1.13)	-0.28*** (-2.71)	-0.27*** (-2.68)	-0.24* (-1.72)	-0.22 (-1.58)
$\ln(1 + \text{Number of employees})$	0.067** (2.26)	0.065** (2.18)	0.043 (1.09)	0.039 (0.98)	0.036** (2.41)	0.036** (2.39)	0.026 (1.37)	0.030 (1.59)
Family owned	0.11 (1.15)	0.11 (1.21)	0.072 (0.58)	0.084 (0.68)	0.051 (1.38)	0.050 (1.37)	0.053 (1.24)	0.052 (1.22)
$\ln(1 + \text{Firm's age})$	0.013	0.011	-0.0082	-0.017	0.025	0.025	0.028	0.029

Variable	Unlimited Liability				Limited Liability			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Debt/assets ratio	(0.43) 0.011 (1.41)	(0.36) 0.011 (1.43)	(-0.19) 0.016** (2.12)	(-0.40) 0.015* (1.92)	(0.91) 0.0084 (1.34)	(0.93) 0.0087 (1.37)	(0.87) 0.011* (1.84)	(0.89) 0.0098* (1.73)
Profits/assets ratio	-0.0030 (-0.49)	-0.0029 (-0.49)	-0.0020 (-0.40)	-0.0018 (-0.35)	0.000026*** (10.6)	0.000026*** (10.9)	0.000026*** (8.47)	0.000026*** (8.43)
Past bankruptcy filing	-0.047 (-0.26)	-0.049 (-0.27)	-0.25 (-1.47)	-0.25 (-1.43)	-0.087 (-0.72)	-0.088 (-0.72)	-0.031 (-0.19)	-0.037 (-0.22)
Firm credit score	-0.00037 (-0.41)	-0.00047 (-0.54)	-0.0016 (-1.44)	-0.0017 (-1.52)	-0.00019 (-0.32)	-0.00020 (-0.33)	0.00036 (0.48)	0.00038 (0.51)
Past business delinquency	-0.0059 (-0.24)	-0.0094 (-0.37)	-0.0014 (-0.043)	0.0024 (0.073)	0.016 (0.89)	0.017 (0.92)	0.012 (0.54)	0.011 (0.47)
Past personal delinquency	0.00023 (0.0071)	-0.00022 (-0.0068)	-0.019 (-0.45)	-0.023 (-0.53)	-0.0026 (-0.091)	-0.0019 (-0.068)	0.033 (0.94)	0.032 (0.90)
Checking account at bank	-0.11 (-1.39)	-0.11 (-1.43)	-0.16* (-1.80)	-0.15* (-1.78)	-0.15*** (-3.64)	-0.15*** (-3.58)	-0.15** (-2.55)	-0.15** (-2.61)
Ln(1+Length of relationship)	-0.035 (-0.92)	-0.031 (-0.83)	0.0022 (0.051)	0.0021 (0.050)	-0.047** (-2.29)	-0.046** (-2.31)	-0.045* (-1.84)	-0.046* (-1.86)
Number of lenders	0.0080 (0.63)	0.0099 (0.80)	0.017 (0.82)	0.018 (0.84)	-0.015** (-2.06)	-0.015** (-2.12)	-0.023** (-2.23)	-0.023** (-2.18)
Ln(1+Distance to lender)	0.022 (1.31)	0.022 (1.26)	0.016 (0.73)	0.015 (0.69)	0.0070 (0.57)	0.0076 (0.62)	0.017 (1.08)	0.017 (1.06)
HHI deposit market	0.11 (0.40)	0.12 (0.43)	0.044 (0.16)	0.023 (0.087)	0.052 (0.27)	0.054 (0.28)	0.16 (0.64)	0.17 (0.71)
Firm in MSA	0.058 (0.78)	0.066 (0.88)	0.064 (0.77)	0.054 (0.65)	0.017 (0.35)	0.018 (0.36)	0.021 (0.40)	0.024 (0.45)
Floating rate	0.10** (2.10)	0.099** (2.03)	0.054 (0.90)	0.059 (0.95)	0.071 (1.42)	0.069 (1.39)	0.058 (0.93)	0.061 (0.98)
Observations	943	943	589	589	3095	3095	2058	2058
R-squared	0.41	0.41	0.45	0.45	0.40	0.40	0.39	0.39

Table 9 – The Effect of the Homestead Exemptions on Loan Rate

The table lists the coefficients from a linear regression of *Loan rate* on the set of variables reported. The model also includes (estimates not shown) year dummies, one-digit SIC dummies, and dummies for the type of the loan. In the first specification, *Ln(1+Homestead exemption)*, we impute for the unlimited exemptions the maximum homestead exemption in the same period. *Inverse homestead exemption* refers to the functional form: $f(x)=1-(1/(1+x))$, where x is the homestead exemption scaled by its sample mean (sample mean is exclusive the unlimited exemptions). *Adjusted exemption* is given by: $-Ln(1+\max\{z,0\})$, where z is the value of the home equity of the firm's owner minus the homestead exemption. The *Inverse adjusted exemption* refers to the functional form: $f(w)$, where $w=\max\{z,0\}$, and where w is scaled by its sample mean. The row *Effect Δ exemptions (0-Unlim.)* refers to the predicted change in probability of the dependent variable that results from changing the exemption level from zero to unlimited. The effect was calculated at the mean value of the other independent variables. For the first specification (columns 1 and 5) we set the unlimited exemption to the maximum exemption level in the 1998 SSBF (\$200,000). In the calculation of these effects for the specifications that use the adjusted exemptions (columns 3, 4, 7, and 8), we set the value of the home equity to its sample median (equals \$80,000 for the unlimited liability firms, and \$140,000 for the limited liability firms). The dataset comprises the 1993, 1998 and 2003 SSBF. The third and fourth specifications (columns 3, 4, 7, and 8) use only data from the 1998 and 2003 SSBF because the home equity value is not available for 1993. The standard errors were clustered at the state level. Robust t statistics are provided in parentheses. The symbols ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Variable	Unlimited Liability				Limited Liability			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln(1+Homestead exemption)	0.090** (1.96)				0.073*** (3.88)			
Inverse homestead exemption		0.42 (1.22)				0.50*** (2.70)		
Adjusted exemption			0.030 (1.05)				0.030* (1.70)	
Inverse adjusted exemption				0.51 (0.78)				0.34 (0.91)
<i>Effect Δ exemptions (0-Unlim.)</i>	<i>1.097**</i>	<i>0.42</i>	<i>0.34</i>	<i>0.21</i>	<i>0.89***</i>	<i>0.50***</i>	<i>0.36*</i>	<i>0.16</i>
African-American owned	1.66 (1.62)	1.66 (1.61)	2.07 (1.66)	2.06* (1.68)	1.08 (1.47)	1.05 (1.42)	1.16 (1.05)	1.17 (1.07)
Other minority owned	1.08* (1.96)	1.06* (1.90)	0.88 (1.51)	0.92 (1.59)	-0.23 (-0.95)	-0.22 (-0.93)	-0.35 (-1.25)	-0.34 (-1.21)
Female owned	-0.15 (-0.59)	-0.14 (-0.56)	0.11 (0.37)	0.12 (0.41)	-0.028 (-0.13)	-0.024 (-0.11)	-0.099 (-0.39)	-0.089 (-0.36)
Ln(Owner's age)	0.17 (0.38)	0.16 (0.36)	-0.045 (-0.086)	-0.072 (-0.13)	-1.10*** (-3.18)	-1.11*** (-3.23)	-1.35*** (-3.19)	-1.37*** (-3.13)
Ln(1+Number of employees)	-0.18 (-1.25)	-0.17 (-1.21)	-0.17 (-0.94)	-0.16 (-0.89)	-0.38*** (-8.55)	-0.38*** (-8.49)	-0.42*** (-6.01)	-0.42*** (-5.82)
Family owned	0.44 (1.29)	0.43 (1.27)	0.42 (0.76)	0.39 (0.72)	-0.017 (-0.11)	-0.028 (-0.18)	-0.15 (-0.64)	-0.14 (-0.60)
Ln(1+Firm's age)	-0.58***	-0.58***	-0.64***	-0.62***	0.12	0.13	0.18	0.18

Variable	Unlimited Liability				Limited Liability			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	(-3.48)	(-3.43)	(-2.86)	(-2.68)	(1.21)	(1.26)	(1.37)	(1.39)
Debt/assets ratio	0.058	0.058	0.035	0.038	0.0044	0.0041	0.0055	0.0076
	(1.05)	(1.05)	(0.77)	(0.83)	(0.29)	(0.27)	(0.34)	(0.49)
Profits/assets ratio	0.024*	0.024*	0.023**	0.023**	-0.000012	-0.000011	-0.000014	-0.000016
	(1.78)	(1.77)	(2.10)	(2.06)	(-1.52)	(-1.34)	(-1.45)	(-1.62)
Past bankruptcy filing	1.14	1.15	1.24	1.24	0.71	0.69	0.98	0.96
	(1.25)	(1.27)	(0.91)	(0.91)	(1.49)	(1.43)	(0.92)	(0.93)
Firm credit score	-0.0091**	-0.0087**	-0.0086*	-0.0084*	-0.0064*	-0.0065*	-0.0058	-0.0058
	(-2.31)	(-2.27)	(-1.77)	(-1.69)	(-1.91)	(-1.96)	(-1.30)	(-1.31)
Past business delinquency	-0.097	-0.092	-0.061	-0.067	-0.058	-0.061	-0.073	-0.067
	(-0.93)	(-0.89)	(-0.41)	(-0.45)	(-0.75)	(-0.79)	(-0.77)	(-0.70)
Past personal delinquency	0.078	0.080	0.20	0.21	0.065	0.066	0.027	0.035
	(0.61)	(0.62)	(1.18)	(1.22)	(0.75)	(0.78)	(0.22)	(0.29)
Checking account at bank	-0.40	-0.40	-0.37	-0.38	0.023	0.015	-0.029	-0.0083
	(-0.92)	(-0.90)	(-0.70)	(-0.72)	(0.13)	(0.083)	(-0.12)	(-0.033)
Ln(1+Length of relationship)	-0.088	-0.10	-0.12	-0.12	0.028	0.035	0.035	0.034
	(-0.88)	(-1.00)	(-0.88)	(-0.89)	(0.49)	(0.60)	(0.40)	(0.39)
Number of lenders	0.049	0.046	0.094	0.092	0.080*	0.077*	0.057	0.060
	(0.63)	(0.59)	(0.83)	(0.81)	(1.94)	(1.89)	(1.11)	(1.20)
Ln(1+Distance to lender)	0.0095	0.0098	-0.014	-0.013	0.025	0.025	0.020	0.025
	(0.14)	(0.15)	(-0.17)	(-0.16)	(0.40)	(0.41)	(0.29)	(0.37)
HHI deposit market	0.99	1.01	0.85	0.88	0.98	1.00	1.25	1.24
	(0.94)	(0.95)	(0.68)	(0.72)	(1.22)	(1.24)	(1.42)	(1.41)
Firm in MSA	-0.048	-0.060	-0.17	-0.14	0.040	0.037	0.17	0.17
	(-0.14)	(-0.18)	(-0.38)	(-0.34)	(0.26)	(0.24)	(0.94)	(0.95)
Floating rate	-1.05***	-1.05***	-1.17***	-1.18***	-0.63***	-0.63***	-0.73***	-0.73***
	(-3.75)	(-3.73)	(-3.07)	(-3.09)	(-5.57)	(-5.65)	(-4.95)	(-5.00)
Observations	989	989	633	633	3194	3194	2155	2155
R-squared	0.26	0.26	0.30	0.30	0.30	0.30	0.30	0.29

Table 10 – The Effect of the Homestead Exemptions on Loan Size

The table lists the coefficients from a linear regression of $\ln(\text{Loan size})$ on the set of variables reported. The model also includes (estimates not shown) year dummies, one-digit SIC dummies, and dummies for the type of the loan. In the first specification, $\ln(1+\text{Homestead exemption})$, we impute for the unlimited exemptions the maximum homestead exemption in the same period. *Inverse homestead exemption* refers to the functional form: $f(x)=1-(1/(1+x))$, where x is the homestead exemption scaled by its sample mean (sample mean is exclusive the unlimited exemptions). *Adjusted exemption* is given by: $-\ln(1+\max\{z,0\})$, where z is the value of the home equity of the firm's owner minus the homestead exemption. The *Inverse adjusted exemption* refers to the functional form: $f(w)$, where $w=\max\{z,0\}$, and where w is scaled by its sample mean. The row *Effect Δ exemptions (0-Unlim.)* refers to the predicted change in probability of the dependent variable that results from changing the exemption level from zero to unlimited. The effect was calculated at the mean value of the other independent variables. For the first specification (columns 1 and 5) we set the unlimited exemption to the maximum exemption level in the 1998 SSBF (\$200,000). In the calculation of these effects for the specifications that use the adjusted exemptions (columns 3, 4, 7, and 8), we set the value of the home equity to its sample median (equals \$80,000 for the unlimited liability firms, and \$140,000 for the limited liability firms). The dataset comprises the 1993, 1998 and 2003 SSBF. The third and fourth specifications (columns 3, 4, 7, and 8) use only data from the 1998 and 2003 SSBF because the home equity value is not available for 1993. The standard errors were clustered at the state level. Robust t statistics are provided in parentheses. The symbols ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Variable	Unlimited Liability				Limited Liability			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\ln(1+\text{Homestead exemption})$	-0.062*** (-2.80)				0.025 (1.48)			
Inverse homestead exemption		-0.32 (-1.58)				0.0051 (0.038)		
Adjusted exemption			-0.033*** (-2.70)				-0.015** (-2.18)	
Inverse adjusted exemption				-0.95*** (-4.87)				-0.59*** (-4.18)
<i>Effect Δ exemptions (0-Unlim.)</i>	-0.75***	-0.32	-0.37***	-0.39***	0.30	0.0051	-0.18**	-0.28***
African-American owned	-0.11 (-0.65)	-0.11 (-0.66)	-0.055 (-0.25)	-0.046 (-0.20)	0.16 (0.92)	0.12 (0.71)	0.17 (0.81)	0.18 (0.84)
Other minority owned	0.16 (0.85)	0.18 (0.94)	-0.13 (-0.76)	-0.18 (-1.16)	0.11 (0.89)	0.11 (0.93)	0.15 (1.00)	0.14 (1.01)
Female owned	-0.29*** (-3.28)	-0.29*** (-3.32)	-0.31*** (-2.94)	-0.33*** (-3.08)	-0.14** (-2.12)	-0.14** (-2.13)	-0.12* (-1.69)	-0.10 (-1.49)
$\ln(\text{Owner's age})$	0.041 (0.18)	0.046 (0.20)	-0.49** (-2.14)	-0.53** (-2.35)	0.32** (2.12)	0.32** (2.13)	0.50*** (2.93)	0.42** (2.42)
$\ln(1+\text{Number of employees})$	0.53*** (7.52)	0.53*** (7.62)	0.46*** (5.09)	0.43*** (5.03)	0.67*** (16.8)	0.67*** (16.7)	0.59*** (13.7)	0.57*** (13.4)
Family owned	-0.66*** (-3.91)	-0.65*** (-3.88)	-0.89*** (-4.77)	-0.85*** (-4.63)	-0.17** (-2.22)	-0.18** (-2.25)	-0.20** (-2.21)	-0.20** (-2.26)
$\ln(1+\text{Firm's age})$	0.19* (1.78)	0.19* (1.78)	0.26*** (2.71)	0.23** (2.35)	0.073 (0.31)	0.074 (0.32)	0.020 (0.08)	0.014 (0.06)

Variable	Unlimited Liability				Limited Liability			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Debt/assets ratio	(2.38) 0.026*	(2.33) 0.026*	(2.87) 0.027	(2.42) 0.025	(1.09) 0.0062	(1.13) 0.0072	(0.25) 0.0072	(0.18) 0.0093
Profits/assets ratio	(1.68) -0.028***	(1.68) -0.027***	(1.40) -0.025***	(1.34) -0.024***	(0.54) -0.000019***	(0.62) -0.000018***	(0.67) -0.000018***	(0.91) -0.000018***
Past bankruptcy filing	(-3.93) -0.25	(-4.03) -0.26	(-4.36) -0.16	(-4.38) -0.099	(-3.32) -0.37	(-3.23) -0.37	(-2.85) -0.060	(-2.93) -0.024
Firm credit score	(-0.85) 0.00045	(-0.87) 0.00024	(-0.41) 0.00044	(-0.27) 0.00018	(-1.18) 0.0041***	(-1.18) 0.0041***	(-0.14) 0.0055***	(-0.056) 0.0054***
Past business delinquency	(0.29) 0.12*	(0.16) 0.12*	(0.23) 0.11*	(0.095) 0.10*	(3.90) 0.011	(3.81) 0.012	(4.30) 0.036	(4.23) 0.041
Past personal delinquency	(1.92) -0.18***	(1.85) -0.18***	(1.70) -0.16*	(1.70) -0.16**	(0.29) -0.11**	(0.32) -0.11**	(0.69) -0.073	(0.78) -0.072
Checking account at bank	(-3.33) 0.13	(-3.37) 0.12	(-2.01) 0.070	(-2.03) 0.052	(-2.25) 0.091	(-2.22) 0.090	(-0.98) 0.16*	(-1.01) 0.16*
Ln(1+Length of relationship)	(0.98) -0.10	(0.96) -0.096	(0.38) -0.066	(0.30) -0.063	(1.08) -0.072*	(1.06) -0.071*	(1.89) -0.078*	(1.78) -0.076
Number of lenders	(-1.42) -0.0061	(-1.36) -0.0037	(-0.81) 0.0035	(-0.77) 0.0063	(-1.87) 0.039*	(-1.82) 0.038*	(-1.68) 0.052**	(-1.63) 0.050**
Ln(1+Distance to lender)	(-0.16) 0.020	(-0.095) 0.020	(0.059) 0.0062	(0.11) -0.0022	(1.91) 0.054***	(1.81) 0.056***	(2.38) 0.060**	(2.32) 0.060**
HHI deposit market	(0.71) -0.30	(0.69) -0.31	(0.18) -0.47	(-0.066) -0.44	(2.72) -0.11	(2.82) -0.10	(2.67) -0.084	(2.66) -0.17
Firm in MSA	(-0.85) 0.31**	(-0.85) 0.32**	(-1.22) 0.34**	(-1.13) 0.28*	(-0.34) 0.16**	(-0.32) 0.16**	(-0.23) 0.15	(-0.46) 0.13
Floating rate	(2.62) 0.67***	(2.63) 0.67***	(2.29) 0.54***	(1.99) 0.54***	(2.02) 0.56***	(2.03) 0.55***	(1.58) 0.55***	(1.33) 0.53***
Observations	(6.91) 989	(6.91) 989	(4.61) 633	(4.63) 633	(8.01) 3194	(7.91) 3194	(7.48) 2155	(7.50) 2155
R-squared	0.42	0.42	0.43	0.44	0.45	0.45	0.45	0.45