Does Debtor Protection Really Protect Debtors?
Evidence from the Small Business Credit Market

Allen N. Berger
University of South Carolina
Wharton Financial Institutions Center
CentER – Tilburg University
aberger@moore.sc.edu

Geraldo Cerqueiro
CentER – Tilburg University
g.m.cerqueiro@uvt.nl

María Fabiana Penas
CentER – Tilburg University
m.penas@uvt.nl

This draft: December 2008

Does Debtor Protection Really Protect Debtors?
Evidence from the Small Business Credit Market

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 (the debtor's home equity 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 limited liability small businesses (corporations and limited liability partnerships), we also find a reduction in credit availability but of smaller magnitude, together with an increase in the loan rate, and decrease in loan amounts. Our results also suggest that the personal bankruptcy law especially affects firm owners with low home equity values.

I. Introduction

Recent research points to the important role of creditor protection in determining the size and breadth of capital markets (La Porta et al. (1997, 1998), Djankov et al. (2003), Djankov et al. (2007), and Davydenko and Franks (2008)). Poor creditor protection decreases firms' opportunities for external financing, which, in turn, hampers economic growth (King and Levine (1993)). While most of the recent empirical literature has focused on lending to large companies, the effect of creditor protection on bank lending to small businesses is largely unexplored. This is in spite the fact that small businesses constitute a crucial sector of the U.S. economy, contributing more than half of the total GDP and employment. Moreover, small businesses are more prone to problems of informational asymmetries and therefore they tend to depend heavily on a limited number of financial institutions for external finance.

We intend to fill this void by exploiting the differences in U.S. personal bankruptcy law across states. We study the effect of weak creditors' rights to seize borrowers' assets that are embedded in debtor protection laws, on small firms' access to credit, and the price and non-price terms of their loans. 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

1

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, reducing the assets that the bank can seize in case of bankruptcy.

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 both public and confidential data from the 1993, 1998, and 2003 Surveys of Small Business Finances (SSBF). The Surveys 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 supplement these data with state-level control variables that may be correlated with state exemptions, allowing us to better identify the effect of the exemptions. We employ two main measures of debtor protection. The first measure

– which is employed in prior research by Berkowitz and White (2004) – 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 amount is lower than the exemption (the debtor's home equity is fully protected), and is decreasing in the difference between the home equity value and the exemption (the amount of home equity that the creditor can seize). Because it measures the value in home equity that is shielded from creditors under the bankruptcy law, this measure delves directly into the agency problems associated with the bankruptcy law.

We report several 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 16 percentage points for firms located in the states with the highest exemptions (the debtors' home equities are fully protected) compared to firms located in states with no exemptions (the debtors' home equities 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) than unlimited liability non-borrowers in high exemption states, while these two groups do not show any significant difference in terms of credit score in low exemption states.

Second, we find that high levels of debtor protection are associated with considerably deteriorated price and non-price terms for the unlimited liability companies

that do receive credit. Specifically, these firms face not 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 interpret this finding as reflecting the high value to risk-averse borrowers of the wealth insurance provided by high homestead exemptions. Also, consistent with our expectations, we find that greater debtor protection increases significantly the incidence of business collateral, pointing to harsher lending terms together with a substitution from personal real estate collateral towards business collateral.

Fourth, for the limited liability firms, we find a smaller reduction in access to credit driven by increased debtor protection. We also find some effect on the interest rates and, consequently, on the size of the loan.

Our results 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.

We should note that the main problems with debtor protection 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.[1] However, our results suggest that the personal bankruptcy law adversely affects the credit availability and credit terms especially for firm owners with low home equity. The new law does not introduce any significant 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

Our paper contributes to the growing literature on the effect of creditor protection on the functioning of credit markets. Esty and Megginson (2003) and Esty (2004) study how the strength and enforcement of creditors' rights affect the size and composition of loan syndicates. Giannetti (2003) finds that better creditor protection makes it easier for firms investing in intangible assets to obtain loans and for firms operating in volatile sectors to obtain long-term debt. Bae and Ghoyal (2004) and Qian and Strahan (2007) find that strong property rights and more creditor protection lead to better loan contract terms. In a related vein, there is a literature that focuses on the effect of the legal framework on private equity contracts (Lerner and Schoar (2005), Kaplan, Martel, and Stromberg (2007), Hasan and Wang (2008), Bottazzi, Da Rin, and Hellmann (forthcoming)).

---

[1] We address this issue in more detail in Section III.

However, to the best of our knowledge, Berkowitz and White (2004) is the only study analyzing the effect on small business bank lending of weak creditor rights embedded in debtor protection laws. Although they also exploit the U.S. variation across states in exemption levels, our study differs from theirs in several important ways.

First, we develop a measure of debtor protection that takes into account both the homestead exemption level and the debtor's home equity value. While the exemption level assigns the same level of protection to all debtors located in a given state, our preferred measure takes into account that each debtor's extent of protection depends on the debtor's personal wealth. For instance, our preferred measure copes with the view that the credit market should not penalize debtors with zero home equity because homestead exemptions do not effectively protect these debtors.

Second, while Berkowitz and White (2004) analyze the effect of the exemptions level on credit availability, loan rates, and loan amounts, we also investigate how exemptions affect the incidence of different types of collateral, the maturity of the loan, and the qualitative composition of the pool of borrowers.

Third, we control for the costs that banks must incur when foreclosing on a property. These costs vary significantly across states. In fact, Pence (2006) shows that higher foreclosure costs are associated with lower mortgage loan sizes, suggesting that this variable can have important effects on credit availability and on contract terms. Because exemptions may be correlated with high foreclosure costs, controlling for such a factor allows us to better identify the exemptions effect.

Fourth, 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 specified, 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. The availability of more survey waves and more detailed borrower specific information may altogether explain why our findings point to a significantly stronger effect on unlimited liability companies.

Our paper is also related to the literature focusing on how differences in bankruptcy exemption levels affect household credit. For example, Fay, Hurst, and White (2002) find that the probability of filing for bankruptcy increases with the financial benefit of filing (i.e., the debt discharged minus the value of non-exempt assets). Consistent with this result, Gropp, Scholz, and White (1997) find that state bankruptcy exemptions have a positive effect on the probability that households will be turned down for credit or discouraged from borrowing. They also find that generous exemptions redistribute credit from low-asset borrowers towards borrowers with high assets. Finally, Berkowitz and Hynes (1999) and Lin and White (2001) study whether exemptions affect secured lending, specifically mortgages. Their results are mixed. While Berkowitz and Hynes (1999) find that exemptions have neither increased mortgage rates nor the probability of being denied a mortgage, Lin and White (2001) find that applicants for mortgages are more likely to be turned down when exemptions are high.

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.[2]   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.[3]   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 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

---

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

[3] In 2005, about 75% of bankruptcy filings occurred under Chapter 7.

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.[4]

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. Furthermore, the types of personal assets specified in the law vary considerably across states. Consequently, we confine our analysis to the homestead exemptions.[5]

Table 1 displays the homestead exemptions by state for 1993, 1998, and 2003.[6] The homestead exemptions vary widely across states, ranging from zero (e.g., Delaware and Maryland) to unlimited (e.g., Florida and Texas).[7] 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 exemption levels that occurred during our sample period simply reflect nominal adjustments. The median homestead exemption increased at an

---

[4] The law reform had two main purposes (see White (forthcoming)). The first was to deter high-income debtors from filing under Chapter 7. The second was to raise the costs of filing for bankruptcy.

[5] 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.

[6] 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).

[7] 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)).

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 inflation rate (measured with the Consumer Price Index).

IV.   Data and Variables

We use both public and confidential 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 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).[8] Each survey contains a different sample of firms, and therefore we cannot follow firms over time.

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.

---

[8] 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 applications and loan experiences that may have taken place in any of several years for each survey.

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 relationships they have with their financial providers – e.g., the duration of their relationships 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.[9] The unlimited liability group includes sole proprietorships and most partnerships, while the limited liability group contains corporations (both regular and S-type), as well as the limited liability partnerships.[10]

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

Dependent variables

---

[9] 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. 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.

[10] 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.

We employ six dependent variables in our analysis. Our measure of availability of credit (the variable *Discouraged/Denied*) is a dummy variable equal to one if the most recent credit application was ever denied or if the manager was ever discouraged from applying for credit in the three preceding years, 0 otherwise. 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 dependent variables, i.e., the terms of the loan contract, for 35% of the firms in the sample.[11] These variables include a dummy indicating whether personal real estate collateral was pledged, a dummy indicating whether business collateral was pledged, the loan maturity (when specified),[12] the loan interest rate, and the size of the loan. Business collateral includes the following firm assets: inventory, accounts receivable, equipment, vehicles, securities, deposits, real estate, and other unspecified assets.

We analyze personal real estate collateral separately from business collateral because the homestead exemptions may affect these two types of collateral differently. The pledging of collateral blunts the effects of increased debtor protection. However, there are at least two reasons why this effect may dominate for business collateral, but not necessarily for personal real estate collateral. First, banks may face higher costs of seizing real estate collateral in high exemption states.[13] Second, it is more costly for risk-

---

[11] We re-estimated the models for the loan contract terms with a methodology that takes into account the potential sample selection bias (Heckman (1978)). The results (not shown) are similar to those we present.

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

[13] In the context of the bankruptcy law, a property foreclosure requires the approval of the bankruptcy trustee, increasing the delay and imposing higher transactions costs. Because high exemptions increase the probability that a borrower that may also have unsecured loans files for bankruptcy, exemptions may

averse owners to pledge their real estate as collateral when the real estate is protected by the bankruptcy law (i.e., by pledging their house they give up the wealth insurance provided by the exemptions). While the first effect is supply-driven and the second is demand-driven, both effects imply that, in equilibrium, higher exemptions may be associated with a lower incidence of personal real estate collateral.

The descriptive statistics show that on average 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 addition, the unlimited liability firms borrowed substantially smaller amounts and paid higher rates, but benefited on average from longer maturities.

State-level variables

Our main variable of interest is the homestead exemption: the maximum home equity value that a debtor can exempt when filing for personal bankruptcy under Chapter 7. We collected the homestead exemption for each state from Elias, Renauer, and Leonard several editions (see Table 1).

A potential concern is that the exemption variable may be correlated with other state-level characteristics such as other institutional differences, or differences in state economic conditions that could affect the (unobserved) characteristics of the pool of applicants. We therefore employ two additional state-level variables. First, we include a dummy equal to one for the 21 states where lenders must go through the courts to

increase the expected foreclosure costs for the bank. Lin and White (2001) find empirical evidence from the mortgage market that supports this argument.

foreclose on a property (*Judicial foreclosure*), 0 otherwise.[14] This variable controls for

the higher costs of the judicial foreclosure procedure, which takes on average five months

longer than the non-judicial alternative, and imposes higher transaction costs (Wood

(1997)). According to Pence (2006), the judicial procedure can increase costs as much as

10% of the loan balance. She also shows that higher foreclosure costs are associated with

lower mortgage loan sizes, suggesting that this variable can have important effects on

credit availability and on contract terms. Second, in order to control for economic

differences across states that may affect the quality of the pool of applicants, we also

include the state median income (*State median income*), which we obtain from the U.S.

Census Bureau.

Firm-level controls

We include several characteristics of the firm and of the firm's principal owner.

Home equity is the market value of the primary residence of the firm's owner minus the

outstanding mortgage balance. We impute a value of zero for *Home equity* when

business owners do not own their home (this is the case for 7% of the firms). This

variable is only available for the 1998 and 2003 SSBF.

We also include a dummy variable indicating whether an African-American owns

at least 50% of the firm (*African-American*), the number of employees

(*Log(1+Employees)*), a dummy indicating whether a family owns at least 50% of the firm

(*Family owned*), and the firm's age (*Log(1+Firm's age)*). To control for the firm's

financial health, we include the ratios of debt to assets (*Debt/assets ratio*) and profits to

assets (*Profits/assets ratio*). Because these ratios have sometimes implausibly large

---

[14] We are grateful to Karen Pence for providing the foreclosure data.

values, we winsorized (trimmed) the debt to assets ratio at the 95th percentile and the profits to assets ratio at the 5th and 95th percentiles.

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 (*Firm credit score*). The credit score is based on business information and should provide a good estimate of the credit quality of the firm.[15]

Relationship controls

There is ample evidence in the literature on the importance of the nature of the relationship between the firm and its lender in the small business credit market.[16] We include a dummy that equals one if the firm has a checking account with the lending institution (*Checking account*), the duration in years of the relationship the firm has had with the lender (*Log(1+Duration)*), the number of financial institutions from which the firm purchases services (*Number of lenders*), and the distance in miles separating the firm from the bank (*Log(1+Distance)*).

Market-level controls

---

[15] 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.

[16] 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. 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. Mester, Nakamura, and Renault (2007) and Norden and Weber (2008) show that checking account information helps banks monitor borrowers.

To control for the geographic and local market conditions, we include the Herfindahl-Hirschman bank deposit index of banking market concentration (*HHI deposit market*), and a dummy that indicates whether the firm is located in a metropolitan statistical area (*Firm in 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.

Other controls

All regressions include also a set of time dummies and one-digit industry codes (not shown in the tables). In all regressions with the loan contract terms as dependent variables, we also include a dummy indicating whether it is a floating rate loan, and a set of dummies for the type of the loan – line of credit, capital lease, mortgage, motor vehicle, equipment, and other type. These variables should have an important role in ensuring proper identification. 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 an unlimited liability 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:

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

where the vector X includes a constant term plus the control variables defined in the previous section (see Table 2), and ε_1 is the residual term.

Second, higher debtor protection should have differential effects on the incidence of personal real estate collateral and business collateral. As discussed before, the effect of debtor protection on the incidence of personal real estate collateral is ambiguous. In contrast, the pledging of business collateral unequivocally blunts the effects of increased debtor protection. Consequently, higher debtor protection should increase the incidence of business collateral for unlimited liability firms that receive loans. The two corresponding empirical equations are given by:

$$P(\textit{Pers. real estate collateral}) = \alpha_2 \textit{Debtor Protection} + \beta_2 X + \varepsilon_2, \tag{2}$$

$$P(\textit{Bus. assets collateral}) = \alpha_3 \textit{Debtor Protection} + \beta_3 X + \varepsilon_3, \tag{3}$$

which we estimate using a probit model, and we do them 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, 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:

$$Ln(1+Loan\ Maturity) = \alpha_4\ Debtor\ Protection + \beta_4 X + \varepsilon_4, \qquad (4)$$

$$Loan\ Rate = \alpha_5\ Debtor\ Protection + \beta_5 X + \varepsilon_5, \qquad (5)$$

$$Ln(Loan\ Amount) = \alpha_6\ Debtor\ Protection + \beta_6 X + \varepsilon_6, \qquad (6)$$

We use two different measures of debtor protection. The first measure is a logarithmic transformation of the homestead exemption in the state where the firm is located:

$$Debtor\ Protection_1 = Ln(1 + Homestead\ Exemption)$$

For states with unlimited homestead exemptions, we set *Homestead Exemption* equal to the maximum homestead exemption across all states in the same year. These are the results we report in Columns 1 and 4 in Tables 5-10. But we also check for the robustness of our results by assigning a value of $1 million to the states with unlimited exceptions, and by using an inverse transformation that explicitly takes into account the unlimited exemptions as a limiting case. We prefer the logarithmic specification,

however because the resulting coefficients can be interpreted directly. We do not report these other specifications which show similar results.

The second measure – our preferred 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 measure of debtor protection that takes into account the value of the home equity of the firm's owner. The adjusted measure is given by:

$$Debtor\ Protection_2 = - Ln(1 + Max\{Home\ equity - Homestead\ Exemption, 0\}),$$

where *Home equity* is the home equity value of the firm's owner. 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, debtors are fully protected, and hence the function equals zero by definition. The minus sign that precedes the logarithmic function reverses the sign, so that the function is a direct measure of debtor protection.

In our empirical analysis, we focus primarily on the economic effect of the second measure. Since this measure is inclusive of the value of the owner's home equity, it explicitly addresses the agency problems associated with the bankruptcy law – i.e., the agents' actual incentives to file for bankruptcy. To see this, consider a debtor with zero home equity. The first measure assumes that the debtor is protected up to the homestead exemption level and that the level of protection increases with the level of the homestead

exemption. From a creditor perspective, however, the homestead exemption is irrelevant since the debtor has zero home equity. Consequently, the credit market should not penalize this debtor if the homestead exemption level is high. Notice that, irrespective of the exemptions level, our second measure equals zero whenever the home equity value is zero. Another advantage of this measure is that it naturally controls for differences in property values across states.

For each of our empirical models 1-6, we run two specifications, both for unlimited and limited liability firms. The first specification uses the homestead exemption as our measure of debtor protection and uses data from the 1993, 1998, and 2003 SSBF. The second specification uses our borrower-specific measure of debtor protection that takes into account both the exemptions and the owner's home equity. Given that the home equity variable is unavailable for the 1993 SSBF, this specification uses only data from the 1998 and 2003 SSBF.

VI.   Results

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] For this table we consider 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

---

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

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-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 as expected, and the percentage of unlimited liability firms that pledge personal real estate collateral is significantly lower.

With respect to the state-level controls, the difference-of-means tests indicate that high exemption states have a significantly higher state median income and are significantly less likely to require lenders to go through the courts to foreclosure property, suggesting that it is important to control for these state-level differences.

We then investigate how the exemptions affect the credit quality of the pool of borrowers. 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. Panel A shows that while the pool of unlimited liability *borrowers* in high exemption states has significantly higher credit scores than the pool of non-borrowers, this difference is not observed in low exemption states. Moreover, this pattern is not present in the case of 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. This is consistent with an increase in credit quality requirements by banks in response to the adverse incentives created by high exemptions on the unlimited liability firms' owners.[18] They also highlight 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 subsection.

Multivariate analysis

We next examine the effect of exemptions on the availability of credit and on the contract terms after controlling for state-level, market-level and firm and owner characteristics (including the credit score of the firm). We will focus mainly on the economic impact of our borrower-specific measure of debtor protection, given that it is a more precise measure of debtor protection than the homestead exemptions alone.

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 two measures of debtor protection. Columns 1-2 report the results for the unlimited liability companies and Columns 3-4 for the limited liability companies. In Columns 1 and 3 we use the level of the homestead exemption as our main explanatory variable, and in Columns 2 and 4 we use our borrower-specific measure of debtor protection, that takes into account both the exemptions and the owner's home

---

[18] However, note that *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.

equity (which is only available for the 1998 and 2003 SSBF). 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. Our adjusted measure indicates that the probability of an unlimited liability firm being denied credit or discouraged from borrowing increases 16 percentage points if the firm is located in a state with unlimited rather than zero homestead exemptions. This result is robust to the other measure of debtor protection, and is consistent with our previous result on the pool of unlimited liability borrowers being significantly safer in high exemption states. For the limited liability firms, we only find a significant effect in the case of our adjusted measure. However the economic impact is 8 percentage points, half the one we obtain for the unlimited liability companies. This confirms our hypothesis that unlimited liability firms are more adversely affected in their access to credit when the level of debtor protection is high.

We also investigate the effect of debtor protection on the probability that a firm is *denied* credit. The results (not reported) indicate that moving the exemption level from zero to unlimited doubles the likelihood of denial from 10% to 20% for the unlimited liability firms. Furthermore, this effect is statistically significant at the 1% level. For the limited liability group we find no statistical or economically relevant effect (the likelihood of denial drops by 1 percentage point).

Many of our control variables turn out to be significant with the expected sign for both types of firms. A better credit score decreases the probability of denial/discouraged. Also, a longer relationship with the bank increases the availability of credit, consistent with the findings in Cole (1998). In addition, if the company has higher leverage or if it

23

is majority-owned by an African-American, the probability of being credit rationed increases. These results are consistent with Cavaluzzo, Cavaluzzo, and Wolken (2002) who also find that denial rates are significantly higher for firms owned by African-Americans. Finally, if the firm has a larger number of lenders, denial rates are higher, which could be explained by lower quality firms seeking additional financing in other institutions when they are credit-constrained with their primary lender.

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 real estate collateral. For unlimited liability companies, our adjusted measure indicates 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 by 7 percentage points if the firm is located in a state with unlimited rather than zero homestead exemptions. One possible explanation is that banks in high exemption states face higher costs of seizing personal real estate collateral. However, a demand-side explanation is also possible. For risk-averse owners of unlimited liability companies, pledging personal real estate collateral is more costly in high exemption states because by doing so, they lose the wealth insurance that these states provide.

24

However, we still expect that high debtor protection increases the likelihood that firms pledge business collateral, since business collateral blunts the effect of the exemptions. Given the previous results, business collateral could be used also as a substitute for personal collateral. We therefore run the corresponding probit models and we report the results in Table 7. We find no effect of the 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. In contrast and as expected, the probability of pledging business collateral increases with the exemptions level for unlimited liability firms. Specifically, our adjusted measure indicates that the probability of an unlimited liability firm pledging business collateral increases 13 percentage points if the firm is located in a state with unlimited rather than zero homestead exemptions. We note that the economic magnitude of this effect is almost two times greater than that (of opposite sign) we obtained for the personal real estate collateral. This suggests that, beyond reflecting a substitution effect from personal real estate towards business assets, the higher incidence of business collateral is also reflecting harsher lending terms in high exemption states.

Table 8 reports the results for loan maturity. As expected, high exemptions significantly reduce the maturity of the loans for unlimited liability companies. Specifically, according to our adjusted measure, maturity falls by 14 percentage points if the firm is located in unlimited exemption states rather than zero exemption states, suggesting that banks respond to high exemptions not only by increasing the demand for business collateral but also by reducing maturity (Diamond (2004)). This result is

consistent with the findings of Qian and Strahan (2007) who find that that weak creditor protection reduces maturity of loans to large companies.

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 not to be significant for our adjusted measure in the case of unlimited liability firms. The loan rate increases by 36 basis points for limited liability firms if they are located in unlimited exemption states rather than zero-exemption states, and by 41 basis points for the unlimited liability firms. As explained before, high exemptions may also affect small limited liability firms, because the owners of these firms may guarantee the firms' loans or because these firms could transfer assets to the owners. 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. However, the magnitude of the relative decrease in the size of the loan is larger for the unlimited liability companies (32 percentage points against 20 percentage points for our adjusted measure), strongly suggesting that these firms face a more pronounced reduction in their access to credit.

VII.   Conclusion

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 16 percentage points in high exemption states. Consistent with this result, the pool of unlimited liability borrowers has on average significantly better credit scores than the pool of non-borrowers in high exemption states (while there is no significant difference between these two pools of firms 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 significantly higher. We offer several explanations for this result. For limited liability firms, we find that higher debtor protection leads to a smaller reduction in credit availability, and to higher interest rates and consequently lower loan amounts.

References

Angelini, P., Di Salvo, R., Ferri, G., (1998). "Availability and cost of credit for small businesses: Customer relationships and credit cooperatives," *Journal of Banking and Finance* 22, 925-954.

Bae, Kee-Hong and Vidhan K. Ghoyal (2004). "Property Rights Protection and Bank Loan Pricing," Working paper, Hong Kong University of Science and Technology.

Berger, Allen N., Marco Espinosa-Vega, W. Scott Frame, and Nathan Miller (2005). "Debt, Maturity, Risk, and Asymmetric Information," *Journal of Finance*, 60, 2895-2923.

Berger, Allen N. and Gregory F. Udell (1995). "Relationship Lending and Lines of Credit in Small Firm Finance," *Journal of Business*, 68, 351-381.

Berkowitz, Jeremy, and Robert Hynes (1999). "Bankruptcy Exemptions and the Market for Mortgage Loans," *Journal of Law and Economics*, 42, 809-830.

Berkowitz, Jeremy and Michelle J. White (2004). "Bankruptcy and Small Firms' Access to Credit," *Rand Journal of Economics*, 35, 69-84.

Bottazzi, Laura, Marco Da Rin, and Thomas Hellmann (forthcoming). "What is the Role of Legal Systems? Theory and Evidence,*" Journal of Financial Intermediation*.

Brick, Ivan E., and Darius Palia (2007). "Evidence of Jointness in the Terms of RelationshipLending," *Journal of Financial Intermediation* 16, 452-476.

Cole, Rebel (1998). "The importance of relationships to the availability of credit," *Journal of Banking and Finance* 22, 959-977.

Davydenko, Sergei A., and Julian Franks (2008). ""Do bankruptcy codes matter? A study of defaults in France, Germany, and the U.K.," *Journal of Finance* 63, 565-608.

Djankov, Simeon, Rafael La Porta, Florencio Lopez-de-Silanes, Andrei Shleifer (2003). "Courts," *Quarterly Journal of Economics* 118, 453–517.

Djankov, Simeon, Caralee McLiesh, and Andrei Shleifer (2007). "Private credit in 129 countries," *Journal of Financial Economics* 84, 299–329.

Degryse, Hans, and Patrick Van Cayseele (2000). "Relationship lending within a bank-based system: evidence from a European small business data*," Journal of Financial Intermediation* 9, 90-109.

Diamond, Douglas W. (2004). "Presidential Address, Committing to Commit: Short-term Debt when Enforcement is Costly," *Journal of Finance*, 59, 1447-1480.

Elias, Stephen, Albin Renauer, and Robin Leonard. (1993, 1998, 2004). "How to File for Bankruptcy," Nolo Press.

Esty, Benjamin C. (2004). "When do Foreign Banks Finance Domestic Projects? New Evidence on the Importance of Legal and Financial Systems," Working paper, Harvard Business School.

Esty, Benjamin C., and William L. Megginson (2003). "Creditor Rights, Enforcement, and Debt Ownership Structure: Evidence from the Global Syndicated Loan Market," *Journal of Financial and Quantitative Analysis*, 38, 37-59.

Fan, Wei and Michelle J. White (2003). "Personal Bankruptcy and the Level of Entrepreneurial Activity," *Journal of Law and Economics*, 46, 543-567.

Fay, Scott, Erik Hurst, and Michelle J. White (2002). "The Household Bankruptcy Decision," *American Economic Review*, 92, 706-718.

Giannetti, Mariassunta, (2003). "Do Better Institutions Mitigate Agency Problems? Evidence from Corporate Finance Choices," *Journal of Financial and Quantitative Analysis*, 38, 185-212.

Gropp, Reint, John K. Scholz, and Michelle J. White (1997). "Personal Bankruptcy and Credit Supply and Demand," *Quarterly Journal of Economics*, 112, 217-251.

Harhoff, D., Körting, T., (1998). "Lending relationships in Germany – Empirical evidence from survey data," *Journal of Banking and Finance* 22, 1317-1353.

Hasan, Iftekhar, and Haizhi Wang (2008). "The U.S. bankruptcy law and private equity financing: empirical evidence," Small Business Economics 31, 5-19.

Kaplan, Steven N., Frederic Martel, and Per Stromberg (2007). "How do Legal Differences and Learning affect Financial Contracts?", *Journal of Financial Intermediation* 16, 273-311.

King, Robert, and Ross Levine (1993). "Finance and growth: Schumpeter might be right," *Quarterly Journal of Economics* 108, 717–738.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny (1997). "Legal determinants of external finance," *Journal of Finance* 52, 1131-1150.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny (1998). "Law and finance," *Journal of Political Economy* 106, 1113–1150.

Lerner, Josh, and Antoinette Schoar (2005). "Does Legal Enforcement Affect Financial Transactions? The Contractual Channel in Private Equity," *Quarterly Journal of Economics*, 120, 223-246.

Lin, Emily Y., and Michelle J. White (2001). "Bankruptcy and the Market for Mortgage and Home Improvement Loans," *Journal of Urban Economics*, 50, 138-162.

Mester, Loretta J., Leonard I. Nakamura, and Micheline Renault (2007). "Transaction accounts and loan monitoring," *Review of Financial Studies*, 20, 529-556.

Norden, Lars, and Martin Weber (2008). "Checking account information and credit risk of bank borrowers," Working paper, University of Mannheim.

Pence, Karen M. (2006). "Foreclosing on Opportunity: State Laws and Mortgage Credit," *Review of Economic and Statistics*, 88, 177-182.

Petersen, Mitchell A., and Raghuram G. Rajan (1994). "The Benefits of Lending Relationships: Evidence from Small Business Data," *Journal of Finance*, 110, 407-443.

Petersen, M., Rajan, R., (1995). "The effect of credit market competition on lending relationships," *The Quarterly Journal of Economics* 1109, 407-443.

Qian Jun, and Philip E. Strahan (2007). "How Law and Institutions Shape Financial Contracts: The Case of Bank Loans," *Journal of Finance* 62, 2803-2834.

Stiglitz, Joseph E. and Andrew Weiss (1981). "Credit Rationing in Markets with Imperfect Information," *American Economic Review*, 71, 393-410.

White, Michelle J. (2007). "Bankruptcy Law," *in Handbook of Law and Economics (Vol. 2)*, North Holland.

White, Michelle J. (forthcoming). "Bankruptcy: Past Puzzles, Recent Reforms, and the Mortgage Crisis," *American Law and Economics Review*.

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
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."

Table 2 – Descriptive statistics for unlimited liability and limited liability firms

The table displays summary statistics – means (Mean), standard deviations (Std. dev.), and number of observations (N. obs.) – 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. The dataset comprises the 1993, 1998, and 2003 SSBF.

Variable	Unlimited liability			Limited liability		
	Mean	Std. dev.	N. obs.	Mean	Std. dev.	N. obs.
Dependent variables						
Discouraged/Denied (0/1)	0.23	0.42	4,574	0.23	0.42	7,362
Collateral – Personal real estate (0/1)	0.15	0.36	989	0.11	0.31	3,194
Collateral – Business assets (0/1)	0.41	0.49	989	0.52	0.50	3,194
Loan maturity (years)	4.90	6.20	943	3.80	5.10	3,095
Loan rate (%)	8.60	3.20	989	7.50	2.90	3,194
Loan size ($000)	132.31	1,199.02	989	380.10	1,804.61	3,194
State-level variables						
Homestead exemption ($000)	92.37	121.46	4,574	91.85	130.15	7,362
Judicial foreclosure	0.40	0.49	4,574	0.47	0.50	7,362
State median income ($000)	40.44	6.74	4,574	40.52	6.93	7,362
Firm-level controls						
Home equity ($000)	144.54	353.95	2,836	232.36	734.80	4,579
African-American (0/1)	0.04	0.20	4,574	0.03	0.16	7,362
Number of employees	3.90	9.90	4,574	14.00	30.00	7,362
Family owned (0/1)	0.95	0.23	4,574	0.82	0.39	7,362
Firm's age (years)	14.00	11.00	4,574	14.00	11.00	7,362
Debt/assets ratio	0.31	0.45	4,574	0.46	0.50	7,362
Profits/assets ratio	1.20	1.80	4,574	0.72	1.50	7,362
Firm credit score (0-1)	0.50	0.27	4,574	0.54	0.30	7,362
Relationship controls						
Checking account (0/1)	0.84	0.37	4,574	0.83	0.38	7,362
Duration of relationship (years)	8.90	8.80	4,574	8.40	8.90	7,362
Number of lenders	2.00	1.30	4,574	2.50	1.60	7,362
Distance (miles)	37.00	204.00	4,574	47.00	272.00	7,362
Market-level controls						
HHI deposit market (0-1)	0.21	0.12	4,574	0.19	0.10	7,362
Firm in MSA (0/1)	0.76	0.43	4,574	0.83	0.37	7,362

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					
	Low exemption		*High exemption*		Difference		*Low exemption*		*High exemption*		Difference	
	Mean	Std. dev.	Mean	Std. dev.	*Low-High*		Mean	Std. dev.	Mean	Std. dev.	*Low-High*	
Dependent variables												
Discouraged/Denied (0/1)	0.23	0.42	0.26	0.44	-0.03		0.23	0.42	0.23	0.42	0.00	
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*	
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	
Loan maturity (years)	4.70	5.30	4.50	6.40	0.20		3.90	4.80	3.90	5.80	0.00	
Loan rate	8.40	3.00	8.70	2.90	-0.30		7.60	2.60	7.80	2.70	-0.20	
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	
State-level controls												
Judicial foreclosure	0.47	0.50	0.26	0.44	0.21***		0.47	0.50	0.39	0.49	0.08***	
State median income	39.20	7.06	38.47	6.74	0.73**		40.14	7.56	38.66	7.13	1.48***	
Firm-level controls												
Home equity ($000) c	120.36	181.39	129.78	389.35	-9.42		185.07	361.56	204.52	318.43	-19.45	
African-American (0/1)	0.07	0.25	0.04	0.18	0.03***		0.04	0.20	0.02	0.14	0.02**	
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	0.29	0.41	0.34	0.46	-0.05***		0.41	0.47	0.50	0.51	-0.09***	
Profits/assets ratio	1.20	1.80	1.20	1.70	0.00		0.63	1.40	0.74	1.50	-0.11**	
Firm credit score (1-100)	0.47	0.27	0.49	0.26	-0.02		0.54	0.30	0.53	0.29	0.01	
Relationship controls												
Checking account (0/1)	0.84	0.37	0.84	0.37	0.00		0.83	0.38	0.82	0.38	0.01	
Duration 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***	
Market-level controls												
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	
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	

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. The symbols ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Subsamples	(A) All firms	(B) Borrowers	(C) Non-borrowers	Difference (C) - (B)
A) Unlimited liability				
(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
(II) Low exemptions	46.65 (1.24) N=676	46.34 (2.71) N=152	46.74 (1.39) N=524	0.40
(III) High exemptions	49.33 (0.78) N=1,528	52.64 (1.71) N=315	48.50 (0.88) N=1,213	-4.14**
Difference (III) - (II)	2.68*	6.30**	1.76	
B) Limited liability				
(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
(II) Low exemptions	54.39 (1.16) N=1,318	53.43 (1.90) N=579	54.92 (1.45) N=739	1.49
(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
Difference (III) - (II)	-1.89	0.56	-3.22*	

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, *Log(1+Exemption)*, we impute for the unlimited exemptions the maximum homestead exemption in the same period. *Adjusted exemption* is given by: *-Log(1+max{z,0})*, where *z* is the equity of the residence of the firm's owner minus the homestead exemption. The row "Δ Exemptions (0-Unlimited)" 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 3) we set the unlimited exemption to the maximum exemption level in the 1998 SSBF ($200,000). For the specification that uses the adjusted exemptions (columns 2 and 4), 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 second specification (columns 2 and 4) uses only data from the 1998 and 2003 SSBF because the equity of the residence is not available for 1993. Robust standard errors (clustered at the state level) 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)
Log(1+Exemption)	0.04***		0.01	
	(0.01)		(0.01)	
Adjusted exemption		0.05***		0.02***
		(0.01)		(0.01)
Δ Exemptions (0-Unlimited)	0.12	0.16	0.04	0.07
State level controls				
Judicial foreclosure	-0.10	-0.09	0.07	0.04
	(0.07)	(0.11)	(0.06)	(0.08)
State median income	0.30	0.49	0.45**	0.81**
	(0.29)	(0.37)	(0.22)	(0.32)
Firm-level controls				
African-American	0.75***	0.68***	0.68***	0.63***
	(0.12)	(0.14)	(0.11)	(0.15)
Log(1+Employees)	-0.06	-0.04	-0.17***	-0.16***
	(0.06)	(0.07)	(0.03)	(0.04)
Family owned	0.27**	0.16	0.09	0.12*
	(0.11)	(0.15)	(0.06)	(0.07)
Log(1+Firm's age)	-0.10***	-0.07	-0.12***	-0.11***
	(0.04)	(0.05)	(0.04)	(0.04)
Debt/assets ratio	0.41***	0.36***	0.36***	0.36***
	(0.06)	(0.07)	(0.07)	(0.08)
Profits/assets ratio	-0.01	-0.02	-0.06***	-0.06***
	(0.02)	(0.02)	(0.01)	(0.02)
Firm credit score	-0.94***	-0.97***	-1.05***	-1.10***
	(0.10)	(0.12)	(0.08)	(0.10)
Relationship controls				
Checking account	-0.06	0.01	-0.24***	-0.31***
	(0.06)	(0.10)	(0.06)	(0.09)
Log(1+Duration)	-0.14***	-0.13**	-0.10***	-0.08**
	(0.04)	(0.05)	(0.03)	(0.04)
Number of lenders	0.12***	0.18***	0.09***	0.11***
	(0.03)	(0.04)	(0.02)	(0.02)
Log(1+Distance)	0.03	0.05*	-0.01	-0.01
	(0.03)	(0.03)	(0.02)	(0.02)
Market-level controls				
HHI deposit market	-0.69**	-0.70*	0.48	0.39
	(0.31)	(0.39)	(0.31)	(0.39)
Firm in MSA	0.04	-0.04	0.18***	0.19**
	(0.07)	(0.10)	(0.06)	(0.09)
Observations	4,574	2,836	7,362	4,579
Pseudo R^2 (%)	13.33	16.52	14.73	16.52

Table 6 - The effect of the homestead exemptions on the likelihood of Personal real estate collateral

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 loan type dummies. In the first specification, *Log(1+Exemption)*, we impute for the unlimited exemptions the maximum homestead exemption in the same period. *Adjusted exemption* is given by: -*Log(1+max{z,0})*, where *z* is the equity of the residence of the firm's owner minus the homestead exemption. The row "Δ Exemptions (0-Unlimited)" 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 3) we set the unlimited exemption to the maximum exemption level in the 1998 SSBF ($200,000). For the specification that uses the adjusted exemptions (columns 2 and 4), 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 second specification (columns 2 and 4) uses only data from the 1998 and 2003 SSBF because the equity of the residence is not available for 1993. Robust standard errors (clustered at the state level) 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)
Log(1+Exemption)	-0.05		-0.004	
	(0.04)		(0.03)	
Adjusted exemption		-0.04***		-0.01
		(0.02)		(0.01)
Δ Exemptions (0-Unlimited)	-0.12	-0.07	-0.01	-0.02
State level controls				
Judicial foreclosure	0.02	-0.28*	0.03	-0.01
	(0.13)	(0.16)	(0.11)	(0.13)
State median income	0.80	1.14*	0.41	0.23
	(0.57)	(0.68)	(0.43)	(0.62)
Firm-level controls				
African-American	-0.02	0.15	0.21	-0.13
	(0.30)	(0.40)	(0.20)	(0.36)
Log(1+Employees)	-0.14	-0.33**	-0.04	-0.03
	(0.09)	(0.13)	(0.05)	(0.06)
Family owned	0.18		0.40***	0.31**
	(0.22)		(0.12)	(0.15)
Log(1+Firm's age)	0.19**	0.16	0.02	0.07
	(0.09)	(0.10)	(0.06)	(0.08)
Debt/assets ratio	0.09	-0.02	0.38***	0.39***
	(0.17)	(0.24)	(0.08)	(0.12)
Profits/assets ratio	-0.01	-0.0001	0.02	0.02
	(0.04)	(0.05)	(0.04)	(0.04)
Firm credit score	-0.07	-0.30	0.002	-0.15
	(0.19)	(0.25)	(0.12)	(0.18)
Relationship controls				
Checking account	-0.30*	-0.57**	-0.09	-0.22
	(0.18)	(0.26)	(0.11)	(0.14)
Log(1+Duration)	-0.04	0.02	-0.07	-0.05
	(0.07)	(0.08)	(0.05)	(0.06)
Number of lenders	-0.06	-0.04	0.01	-0.003
	(0.05)	(0.06)	(0.03)	(0.03)
Log(1+Distance)	-0.01	-0.02	-0.05*	-0.06*
	(0.03)	(0.04)	(0.03)	(0.03)
Market-level controls				
HHI deposit market	-0.71	-1.07	0.79*	0.16
	(0.59)	(0.72)	(0.47)	(0.58)
Firm in MSA	-0.10	-0.01	0.05	-0.16
	(0.16)	(0.22)	(0.15)	(0.21)
Observations	989	563	3,194	1,931
Pseudo R^2 (%)	16.75	25.39	11.96	12.98

Table 7 - The effect of the homestead exemptions on the likelihood of Business collateral

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 loan type dummies. In the first specification, *Log(1+Exemption)*, we impute for the unlimited exemptions the maximum homestead exemption in the same period. *Adjusted exemption* is given by: - *Log(1+max{z,0})*, where *z* is the equity of the residence of the firm's owner minus the homestead exemption. The row "Δ Exemptions (0-Unlimited)" 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 3) we set the unlimited exemption to the maximum exemption level in the 1998 SSBF ($200,000). For the specification that uses the adjusted exemptions (columns 2 and 4), 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 second specification (columns 2 and 4) uses only data from the 1998 and 2003 SSBF because the equity of the residence is not available for 1993. Robust standard errors (clustered at the state level) are provided in parentheses. The symbols ***, **, and * indicate significance at the 1%, 5%, 10% levels, respectively.

Variable	Unlimited liability		Limited liability	
	(1)	(2)	(3)	(4)
Log(1+Exemption)	0.07**		0.01	
	(0.03)		(0.02)	
Adjusted exemption		0.03**		0.0003
		(0.01)		(0.01)
Δ Exemptions (0-Unlimited)	0.32	0.13	0.03	0.001
State level controls				
Judicial foreclosure	-0.01	0.02	-0.10	-0.17
	(0.12)	(0.14)	(0.09)	(0.11)
State median income	-0.21	0.33	-0.42	-0.31
	(0.49)	(0.62)	(0.33)	(0.41)
Firm-level controls				
African-American	-0.78**	-1.06**	0.25	0.16
	(0.31)	(0.48)	(0.22)	(0.30)
Log(1+Employees)	0.13	0.16	0.15***	0.14***
	(0.09)	(0.10)	(0.03)	(0.04)
Family owned	-0.07	-0.08	-0.14	-0.18
	(0.16)	(0.25)	(0.09)	(0.11)
Log(1+Firm's age)	0.13*	0.20**	0.04	0.05
	(0.07)	(0.09)	(0.06)	(0.07)
Debt/assets ratio	-0.14	0.005	0.02	0.03
	(0.15)	(0.19)	(0.10)	(0.11)
Profits/assets ratio	-0.08	-0.08	-0.06*	-0.08**
	(0.05)	(0.07)	(0.03)	(0.04)
Firm credit score	-0.33**	-0.47**	-0.18	-0.19
	(0.14)	(0.21)	(0.13)	(0.15)
Relationship controls				
Checking account	0.01	-0.10	0.17	0.16
	(0.14)	(0.19)	(0.11)	(0.14)
Log(1+Duration)	-0.17**	-0.18**	-0.02	-0.0002
	(0.07)	(0.07)	(0.05)	(0.05)
Number of lenders	-0.05	-0.04	0.06***	0.06**
	(0.03)	(0.04)	(0.02)	(0.02)
Log(1+Distance)	0.001	-0.02	0.01	0.01
	(0.03)	(0.03)	(0.02)	(0.03)
Market-level controls				
HHI deposit market	0.05	0.37	0.001	0.14
	(0.54)	(0.54)	(0.46)	(0.55)
Firm in MSA	-0.21	-0.15	-0.08	-0.11
	(0.13)	(0.16)	(0.09)	(0.15)
Observations	989	563	3,194	1,931
Pseudo R^2 (%)	22.57	20.55	13.54	11.88

Table 8 – The effect of the homestead exemptions on Loan maturity

The table lists the coefficients from a linear regression of *Log(1+Loan maturity)* on the set of variables reported. The model also includes (estimates not shown) year dummies, one-digit SIC dummies, loan type dummies, and a dummy for whether it is a floating rate loan. In the first specification, *Log(1+Exemption)*, we impute for the unlimited exemptions the maximum homestead exemption in the same period. *Adjusted exemption* is given by: $-Log(1+max\{z,0\})$, where *z* is the equity of the residence of the firm's owner minus the homestead exemption. The row "Δ Exemptions (0-Unlimited)" refers to the estimated change of the dependent variable that results from changing the exemption level from zero to unlimited. For the first specification (columns 1 and 3) we set the unlimited exemption to the maximum exemption level in the 1998 SSBF ($200,000). For the specification that uses the adjusted exemptions (columns 2 and 4), 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 second specification (columns 2 and 4) uses only data from the 1998 and 2003 SSBF because the equity of the residence is not available for 1993. Robust standard errors (clustered at the state level) 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)
Log(1+Exemption)	-0.03*		0.01*	
	(0.01)		(0.01)	
Adjusted exemption		-0.01***		0.004
		(0.004)		(0.004)
Δ Exemptions (0-Unlimited)	-0.33	-0.16	0.16	0.04
State level controls				
Judicial foreclosure	0.07	0.13**	0.08**	0.09**
	(0.06)	(0.05)	(0.03)	(0.04)
State median income	0.29	0.38*	0.16	0.21
	(0.22)	(0.22)	(0.12)	(0.21)
Firm-level controls				
African-American	0.06	0.07	0.12*	0.11
	(0.08)	(0.11)	(0.06)	(0.09)
Log(1+Employees)	0.06**	0.05	0.03*	0.03
	(0.03)	(0.04)	(0.01)	(0.02)
Family owned	0.11	0.22*	0.06*	0.07
	(0.09)	(0.12)	(0.03)	(0.05)
Log(1+Firm's age)	0.03	0.02	-0.01	0.002
	(0.03)	(0.04)	(0.03)	(0.03)
Debt/assets ratio	0.05	0.07	-0.01	0.01
	(0.05)	(0.07)	(0.03)	(0.04)
Profits/assets ratio	-0.04**	-0.05**	-0.004	-0.002
	(0.01)	(0.02)	(0.01)	(0.02)
Firm credit score	-0.02	-0.07	-0.05	0.03
	(0.09)	(0.09)	(0.06)	(0.08)
Relationship controls				
Checking account	-0.12	-0.15	-0.14***	-0.15**
	(0.08)	(0.09)	(0.04)	(0.06)
Log(1+Duration)	-0.03	0.01	-0.06***	-0.06**
	(0.04)	(0.04)	(0.02)	(0.03)
Number of lenders	0.002	-0.01	-0.01*	-0.03**
	(0.01)	(0.02)	(0.01)	(0.01)
Log(1+Distance)	0.02	0.03	0.01	0.02
	(0.02)	(0.02)	(0.01)	(0.02)
Market-level controls				
HHI deposit market	0.14	0.33	0.09	0.12
	(0.27)	(0.29)	(0.19)	(0.22)
Firm in MSA	0.07	0.17**	0.01	-0.003
	(0.07)	(0.08)	(0.05)	(0.06)
Observations	943	517	3,095	1,832
R² (%)	41.35	47.27	39.21	39.8

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, loan type dummies, and a dummy for whether it is a floating rate loan. In the first specification, *Log(1+Exemption)*, we impute for the unlimited exemptions the maximum homestead exemption in the same period. *Adjusted exemption* is given by: *-Log(1+max{z,0})*, where *z* is the equity of the residence of the firm's owner minus the homestead exemption. The row "Δ Exemptions (0-Unlimited)" refers to the estimated change of the dependent variable that results from changing the exemption level from zero to unlimited. For the first specification (columns 1 and 3) we set the unlimited exemption to the maximum exemption level in the 1998 SSBF ($200,000). For the specification that uses the adjusted exemptions (columns 2 and 4), 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 second specification (columns 2 and 4) uses only data from the 1998 and 2003 SSBF because the equity of the residence is not available for 1993. Robust standard errors (clustered at the state level) 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)
Log(1+Exemption)	0.10**		0.06**	
	(0.05)		(0.03)	
Adjusted exemption		0.04		0.03*
		(0.03)		(0.02)
Δ Exemptions (0-Unlimited)	1.27	0.41	0.69	0.36
State level controls				
Judicial foreclosure	0.03	-0.10	-0.24	-0.18
	(0.24)	(0.36)	(0.17)	(0.19)
State median income	0.07	-0.24	-0.15	-0.54
	(1.22)	(1.35)	(0.58)	(0.72)
Firm-level controls				
African-American	1.65	2.09	1.16	1.29
	(1.00)	(1.29)	(0.72)	(1.14)
Log(1+Employees)	-0.17	-0.13	-0.40***	-0.45***
	(0.14)	(0.15)	(0.05)	(0.08)
Family owned	0.43	0.67	-0.04	-0.24
	(0.32)	(0.52)	(0.17)	(0.25)
Log(1+Firm's age)	-0.53***	-0.54**	0.004	0.03
	(0.16)	(0.21)	(0.08)	(0.11)
Debt/assets ratio	0.59**	0.80**	-0.05	-0.07
	(0.26)	(0.35)	(0.15)	(0.18)
Profits/assets ratio	0.14*	0.20*	0.02	0.02
	(0.07)	(0.10)	(0.06)	(0.08)
Firm credit score	-0.81**	-0.77*	-0.70**	-0.63
	(0.34)	(0.41)	(0.29)	(0.40)
Relationship controls				
Checking account	-0.39	-0.45	0.01	-0.01
	(0.41)	(0.56)	(0.18)	(0.25)
Log(1+Duration)	-0.08	-0.13	0.01	-0.02
	(0.10)	(0.15)	(0.06)	(0.08)
Number of lenders	0.05	0.06	0.08*	0.06
	(0.08)	(0.10)	(0.04)	(0.05)
Log(1+Distance)	0.02	-0.003	0.02	0.01
	(0.06)	(0.08)	(0.06)	(0.07)
Market-level controls				
HHI deposit market	0.97	0.34	1.03	1.69*
	(1.06)	(1.31)	(0.79)	(0.87)
Firm in MSA	-0.04	-0.21	0.04	0.12
	(0.32)	(0.42)	(0.16)	(0.20)
Observations	989	563	3,194	1,931
R² (%)	26.07	31.79	29.36	29.1

Table 10 – The effect of the homestead exemptions on Loan size

The table lists the coefficients from a linear regression of *Log(Loan size)* on the set of variables reported. The model also includes (estimates not shown) year dummies, one-digit SIC dummies, loan type dummies, and a dummy for whether it is a floating rate loan. In the first specification, *Log(1+Exemption)*, we impute for the unlimited exemptions the maximum homestead exemption in the same period. *Adjusted exemption* is given by: *-Log(1+max{z,0})*, where *z* is the equity of the residence of the firm's owner minus the homestead exemption. The row "Δ Exemptions (0-Unlimited)" refers to the estimated change of the dependent variable that results from changing the exemption level from zero to unlimited. For the first specification (columns 1 and 3) we set the unlimited exemption to the maximum exemption level in the 1998 SSBF ($200,000). For the specification that uses the adjusted exemptions (columns 2 and 4), 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 second specification (columns 2 and 4) uses only data from the 1998 and 2003 SSBF because the equity of the residence is not available for 1993. Robust standard errors (clustered at the state level) 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)
Log(1+Exemption)	-0.07**		0.03*	
	(0.03)		(0.02)	
Adjusted exemption		-0.03**		-0.02**
		(0.01)		(0.01)
Δ Exemptions (0-Unlimited)	-0.80	-0.32	0.38	-0.20
State level controls				
Judicial foreclosure	-0.04	-0.11	0.08	0.01
	(0.13)	(0.12)	(0.08)	(0.07)
State median income	0.35	0.71*	0.14	-0.04
	(0.42)	(0.41)	(0.30)	(0.37)
Firm-level controls				
African-American	-0.10	-0.03	0.10	0.14
	(0.19)	(0.25)	(0.18)	(0.25)
Log(1+Employees)	0.56***	0.49***	0.67***	0.59***
	(0.08)	(0.09)	(0.04)	(0.05)
Family owned	-0.71***	-0.81***	-0.18**	-0.19*
	(0.18)	(0.19)	(0.08)	(0.10)
Log(1+Firm's age)	0.21**	0.20**	0.11*	0.06
	(0.08)	(0.08)	(0.06)	(0.08)
Debt/assets ratio	0.13	0.11	0.02	-0.03
	(0.09)	(0.11)	(0.07)	(0.08)
Profits/assets ratio	-0.16***	-0.13***	-0.11***	-0.11***
	(0.04)	(0.04)	(0.02)	(0.03)
Firm credit score	0.02	-0.02	0.46***	0.56***
	(0.16)	(0.24)	(0.11)	(0.14)
Relationship controls				
Checking account	0.08	0.02	0.09	0.12
	(0.13)	(0.16)	(0.09)	(0.09)
Log(1+Duration)	-0.10	-0.08	-0.07*	-0.08*
	(0.07)	(0.07)	(0.04)	(0.05)
Number of lenders	-0.02	0.01	0.03	0.06**
	(0.04)	(0.06)	(0.02)	(0.03)
Log(1+Distance)	0.01	-0.01	0.05**	0.05**
	(0.03)	(0.03)	(0.02)	(0.02)
Market-level controls				
HHI deposit market	-0.35	-0.29	-0.17	-0.26
	(0.38)	(0.42)	(0.31)	(0.35)
Firm in MSA	0.34***	0.29*	0.17**	0.19*
	(0.12)	(0.15)	(0.08)	(0.10)
Observations	989	563	3,194	1,931
R^2 (%)	41.46	44.51	44.97	44.72