HOW MUCH DEBTORS' PUNISHMENT?*

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Abstract

This study investigates the relationship between debtors' punishment and the development of the credit market. As the main goal we empirically analyze what the optimal level of debtors' punishment is to provide the greatest credit market development. In line with earlier theoretical findings from Dubey, Geanakoplos and Shubik (2005), we find that there is an intermediate level of debtors' punishment that maximizes the size of the private credit market. This intermediate level accounts for the need of creditors' protection to reduce moral hazard, encouraging the supply of credit and, for the need to protect borrowers from a bad state of nature.

Keywords: Credit; Bankruptcy; Personal Bankruptcy Law.

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Each time there is a financial crisis, the debate on the possibility of debt repayment in case of bad state of nature grows. Recent discussion in the media[1] points to the consequences of bankruptcy due to job losses and the difficulty for consumers to erase their debts and get a fresh-start, mainly after the 2005 Bankruptcy Reform Act.

However, in the recent past, the debate hinged on the importance of inducing debt repayment in order to reduce moral hazard. As an example, there is a big discussion on Personal Bankruptcy Reform or the "Bankruptcy Abuse Prevention and Consumer Act of 2005" as it is usually known, whose main goal was to stop consumers from using bankruptcy to walk way from debt they could afford to repay.

In response to the current crisis, new reform ideas are being discussed in the House of Representatives and Senate.[2] The main proposal[3] allows debtors to cram-down mortgage claims when the mortgage principle exceeds the current market value of the house, providing them with a better chance to repay their debts and have a fresh-start.[4]

This discussion underscores the relevance of having a balance between the opportunity for a fresh-start and their incentive to repay debts. The early literature on credit market development showed how important the incentive to repay is for this development (e.g., La Porta et al. 1997 and Djankov et al. 2007). However, in credit markets there is a trade-

[1] See for example "Downturn Pushes More Toward Bankruptcy" (*The New York Times*, 04/03/2009)

[2] See for example "Democrats to Temper Mortgage Relief Bill", (*The Washington Post*, 03/04/2009)

[3] See "Sen. Durbin Makes the Case for Judicial Mortgage Modification in Chapter 13", American Bankruptcy Institute Journal, 2008.

[4] Under this approach, the mortgage holder obtain a new mortgage closer to the market value, with the terms, the interest and other things determined by the bankruptcy judge.

off between the incentive to repay debts to reduce moral hazard and the need to protect borrowers from the bad state of nature, allowing them a fresh-start.

The intuition of this trade-off comes from the influence that the punishment of debtors (creditors' protection) exerts on loan supply and demand. Legal systems that impose higher levels of punishment on debtors in case of bankruptcy tend to inhibit the demand for credit due to borrowers' fear of the bad state of nature. However, this also reduces the moral hazard problem. On the other hand, weak punishment of debtors motivates moral hazard actions, providing less protection to creditors, which inhibits the supply of credit. At the limit, extremely high or low levels of debtors' punishment tend to impair the credit market, through the demand side or the supply side, respectively.

The present paper approaches this problem empirically. We analyze how the degree of debtors' punishment affects the development of the credit market. In line with the theoretical finding of Dubey, Geanakoplos and Shubik (2005),[5] we show that there is an intermediate level of debtors' punishment that is optimal for the development of the credit market, by maximizing its size.

In the early literature on credit market development, La Porta, Silanes, Shleifer and Vishny (1997, 1998) constructed a measure of creditors' legal rights, called the creditor rights index. This index measures the legal rights of creditors against defaulting debtors in

[5]Dubey, Geanakoplos and Shubik (2005), using a general-equilibrium model with incomplete markets, show that an intermediate level of penalty for debtors is optimal in the sense that it provides a higher level of individual credit and welfare in the economy.

different countries and has been previously interpreted as a measure of creditor protection. They used cross-country regressions to suggest that the greater the creditor protection is, the higher the amount of private debt is. Considering the effect of information on credit markets, Jappelli and Pagano (2000, 2002), Pagano and Jappelli (1993) and Sapienza (2002) showed the importance of this factor in determining credit availability. They used data from credit bureaus – information on credit histories and current indebtedness of various borrowers – to assess this issue empirically. Djankov et al. (2007), analyzing both factors (creditors' protection and information) together and using a larger sample of countries, found that more creditor protection and better information sharing are associated with broader credit markets. In addition, they found that the private credit to GDP ratio rises following either improvements in creditor rights or the introduction of credit bureaus.

Our paper, in contrast, analyzes creditors' protection when it is directly determined by debtors' punishment. To assess this question, we compare the levels of punishment allowed by each state in the U.S., taking advantage of changes provided by the Personal Bankruptcy Reform Act of 1978, which redefined the degree of penalty on debtors in case of bankruptcy. By looking at the changes in the degree of debtors' punishment, we investigate whether and how these changes affect the credit market. This difference-in-difference approach gets around the concern that credit institutions are endogenous, and presents an alternative to instrumental variables techniques.

Contrary to other authors, we find that the relationship between creditors' protection

and the size of the credit market is not always increasing. Indeed, there is an intermediate level of creditors' protection that is optimal for credit market development.

Thus, this paper aims to answer the following issues: How does the relationship between debtors' punishment and the credit market development work? Is the optimal level of punishment intermediate? What is this optimal level?

In this effort, we first discuss the theoretical models that support our empirical claims. We follow the idea from Dubey, Geanakoplos and Shubik (2005) in a more simple setup, using real economic variables to reflect certain features observed in the U.S. economy, such as the possibility of debtors filing for bankruptcy strategically or by bad fortune and the punishment exogenously imposed by the bankruptcy rules. Then we estimate - using a parametric and a semi-parametric method - the effect of debtors' punishment on the measure of credit market development, using equilibrium data of loans (aggregated) and information on bankruptcy exemption in each state over the period from 1992 to 1999, during which several changes occurred in the exemption levels.

We find a non-monotonic shape in the relationship between the level of debtors' punishment and the amount of credit to both small businesses and individuals. States with extreme levels of punishment (high or low) tend to have a lower volume of credit relative to states with intermediate levels of protection. Thus, the punishment applied by bankruptcy legislation should be neither so harsh that it inhibits credit demand nor so lenient that it reduces credit supply.

Although personal bankruptcy deals directly with unsecured credit, it also affects secured credit like mortgages. We find that mortgage and total secured debt are related to punishment in the same way as unsecured debt. Intuitively, for states with harsh punishment, the demand for unsecured credit should be low, and as a consequence, the incentive to use unsecured credit to pay secured credit should be smaller, inhibiting the demand for secured credit. On the other hand, states with weaker punishment have lower access to credit also, but in this case due to supply side factors. The limited access to unsecured credit reduces the possibility of using this type of loan in order to repay secured credit. Thus, we can expect similar results from the relation between debtors' punishment and secured credit.

The effect of the Personal Bankruptcy Law on mortgage was evidenced as one source of the increase of subprime mortgage foreclosures. Morgan et al. (2008) argue that the 2005 Bankruptcy Reform Act contributed to the surge of subprime foreclosures by shifting risk from unsecured credit lenders to mortgage lenders. Before the bankruptcy reform, any household could file for Chapter 7 bankruptcy and have credit cards and other unsecured credit discharged. Sidestepping unsecured debts left more income to pay the mortgage. The bankruptcy reform blocked this maneuver by way of the means test, which forces better-off householders who file for bankruptcy use the Chapter 13 route, where they must continue to pay unsecured lenders using their future earnings. When the means test binds, cash constrained mortgagors who might have saved their home by filing for Chapter 7 are more likely to face foreclosure. As a result, Morgan et al. (2008) found a substantial impact of

the bankruptcy reform on subprime foreclosure, where the foreclosure rate during the seven quarters after the reform was 12.6% higher.

The remainder of the article is organized as follows: Section I presents the main personal bankruptcy rules; Section II discusses the theoretical approach; Section III shows our empirical results; and Section IV concludes.

I. Personal Bankruptcy Law and the 1978 Reform Act

The personal bankruptcy procedures apply directly to individuals and small businesses. The reason of why the personal bankruptcy law applies to small business and not just to individuals is because when a firm is noncorporate, its debts are personal liabilities of the owner, so that lending to the firm is legally equivalent to lending to the owner. If the firm fails, the owner can file for bankruptcy and his business and unsecured personal debts will be discharged. When a firm is a corporation or other limited liability entity, limited liability implies that the owners are not legally responsible for the firm's debts. However, lenders may require, and often do, that the owners guarantee loans with some personal assets (second mortgages for example). Thus, besides personal debts, personal bankruptcy law applies to noncorporate businesses and may also apply to small corporate businesses.

When individuals and unincorporated firms[6] file under Chapter 7 of the U.S. Bankruptcy Code, they receive a discharge from unsecured personal and business debt in return for

[6] Owners typically have high debt levels, much of which consists of debts of the failed firm.

giving up assets in excess of the relevant state's bankruptcy exemption.[7] Creditors may not enforce claims against debtors' assets if the assets are covered by Chapter 7 bankruptcy exemption. This provision prevents creditors from taking a blanket security interest in all debtors' possessions.

Personal bankruptcy law became much more favorable to debtors following the passage of 1978 Bankruptcy Reform Act. The new law allows states to opt out of the federal exemption by adopting their own bankruptcy exemptions. By 1983 all the states had done so, although one-third of the states allowed debtors to choose between state and federal bankruptcy exemptions. Many states significantly raised their bankruptcy exemptions when they passed opt-out legislation, adopting widely varying exemption levels. In 1992 the lowest bankruptcy exemption level was in Maryland, with no homestead exemption and $ 5,500 of personal bankruptcy exemption, while Texas' exemption was unlimited to the homestead and $ 30,000 for personal property.

[7]Most states have several types of exemptions, like residence exemptions (homestead exemptions), personal property exemptions (like equity in cars, furniture, jewelry and cash) and wildcard exemptions (where the debtor chooses anything to be exempted until some fixed value). Usually, the homestead exemption is the largest and other exemptions are small.

Figure 1: Distribution of Bankruptcy Exemptions Around the U.S. at 1992

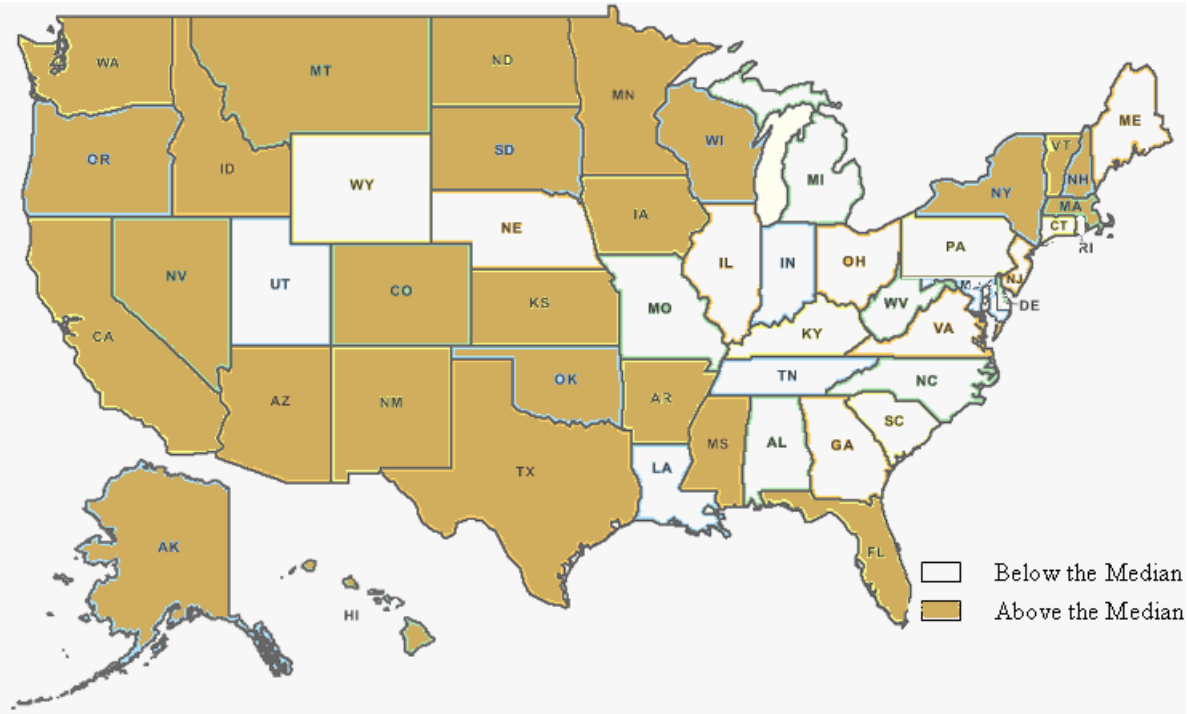
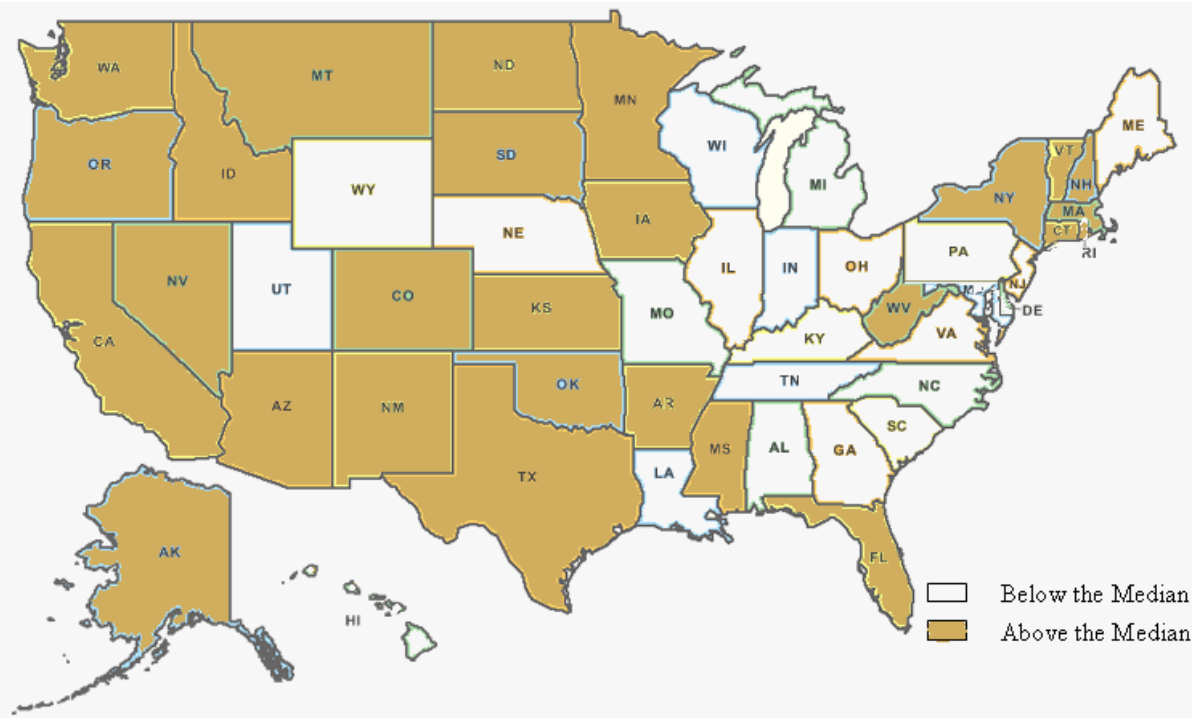
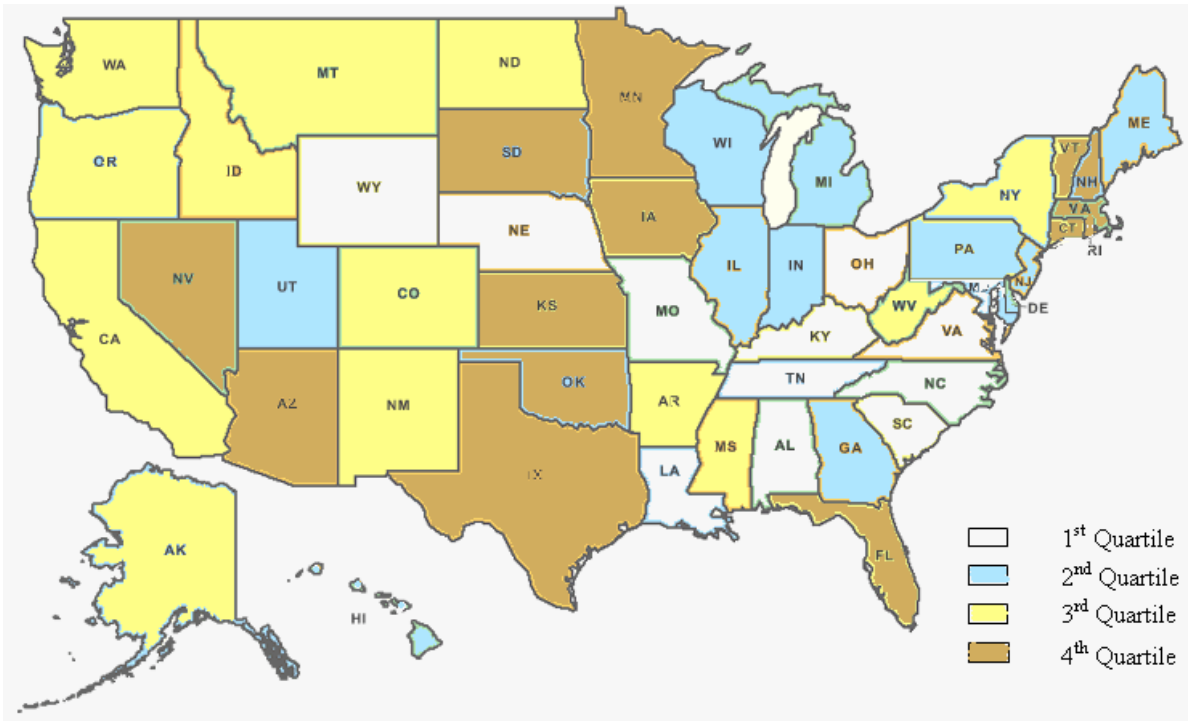


Figure 2: Distribution of Bankruptcy Exemptions Around the U.S. at 2005





Figures 1 and 2 illustrate the distribution of bankruptcy exemptions (homestead exemptions plus personal property exemptions) in the various states in 1992 and 2005, respectively. Notice that the western states usually apply more lenient bankruptcy exemptions, contrary to the eastern ones. Most states that exempt debtors above the national median are located in the West. Despite the increase in the bankruptcy exemption over time - in 1992 the median bankruptcy exemption was $ 24,400 against $ 51,350 in 2005 - the distribution around the U.S. did not change much (see Figures 1 and 2). Figure 2 also shows the punishment distribution divided by quartile.

There is also a second bankruptcy procedure, called Chapter 13, and debtors are allowed to choose between them. Under Chapter 13, debtors must present a plan to use some of their future earnings to repay part or their total debt, but all their assets are exempt. Debtors generally have an incentive to choose Chapter 7 rather than Chapter 13 whenever their assets are less than their bankruptcy exemptions, because doing so allows them to avoid repaying debt from either assets or future income. Because many states' exemption levels are high relative to the assets of the typical person who files for bankruptcy, around 70 percent of all bankruptcy filings occur under Chapter 7[8]. Even when debtors file under Chapter 13, the amount they are willing to repay is strongly affected by Chapter 7 bankruptcy exemptions. Suppose, for example, that a person with assets of $50,000 living in a state whose exemption level is $35,000 considers filing for bankruptcy. Because the debtor would have to give up

[8]See Barron and Staten (1997)

$15,000 in assets if he filed under Chapter 7, he would be willing to pay no more than $15,000 (in present value) from future income if he filed under Chapter 13. As a result of this close relationship between both chapters, we ignore the distinction between them.

Now consider the set of small but incorporated firms. Corporate firms are legally separate from their owners, so owners are not personally responsible for the respective debts. Holding everything constant, this means that small corporations[9] are less creditworthy than small unincorporated firms, because the former have only the corporate assets to back up business debt, while the latter have both the firm's assets and the owner's personal assets. Lenders also know that owners of small corporations can easily shift assets between their personal accounts and their corporate accounts, so that lenders may not view the corporation/noncorporation distinction as meaningful for small firms. In making loans to small corporations, lenders therefore may require that owners personally guarantee the loans. This removes the legal distinction between the corporation and its owners for purposes of the particular loan and puts the owner's personal assets at risk to repay the loan.

Debts can be divided into two different categories: secured and unsecured. Unsecured debts would seem more likely to be affected by bankruptcy exemptions than secured debts. In practice, this distinction is blurred and debtors are often able to arbitrage assets and debts across categories and thereby increase their financial benefit from bankruptcy. For example, debtors might borrow on their credit cards or obtain new consumer loans in order to reduce

[9]For simplicity, the term "corporation" means all limited liability forms of business organization, such as limited partnerships and limited liability companies, as well as joint stock companies (corporations) per se.

secured credit. These transactions convert non-dischargeable secured debt into unsecured debt that is dischargeable in bankruptcy. Or debtors might sell personal property that is in excess of the personal property exemption and use the proceeds to reduce their mortgage or to buy exempted property. In addition, bankruptcy undermines the value of collateral to lenders, since lenders may face delays in repossession or may be unable to repossess the collateral at all (for example, if they seek to repossess an asset for which they do not provide money to finance the purchase)[10]. Also, lenders incur extra-legal costs because they must obtain the permission of the bankruptcy trustee in order to repossess collateral. For these reasons we examine the effects of bankruptcy exemptions on both types of loans.

II. Theoretical Models

Several works formalize theories on private credit. Townsend (1979), Aghion and Bolton (1992), and Hart and Moore (1994, 1998) show that when lenders can more easily force repayment they are more willing to extend credit. Dubey, Geanakoplos and Shubik (1989, 2005) and Dubey and Shubik (1979) approach the problem through the debtors' side, arguing that the degree of punishment of debtors in case of bankruptcy influences the level of credit in the market. Dubey and Shubik (1979) show that when markets are complete, the optimal

[10]In relation to debtors' home, they may be able to get rid of some lien (junior creditors, like second mortgages) without paying a cent to the lienholder. In some states, if debtors' home is sold in bankruptcy, they will get their homestead amount ahead of junior secured creditors holding judicial liens. Debtors can get rid of the lien created by judgment by filing a "motion to avoid a judicial lien". They may also be able to get rid of some liens by filing separate lawsuit in bankruptcy court. See Elias, Renauer, Leonard and Michon (2004).

level of penalty is extremely high. To provide a simple intuitive example, let us suppose a two-period economy where the second period has two states of nature. Suppose that there is only one asset that promises one unit of payment independent of the state of nature, making markets incomplete. For the asset seller (debtor), if he has endowment referring to only one state and if the other state of nature happens, he is bound to default on his promises, ending the asset supply (demand for credit) if the penalty is harsh enough due to the debtors' fear of the bankruptcy punishment. Otherwise, if there are two linearly independents assets in the economy, making the markets complete, the asset seller has the option to sell only the asset referring to the state of nature in which he owns some endowment, thus allowing him to keep the promises. In this case, a harsh enough penalty obligates debtors to sell the assets with promises referring to the states to which they have endowments, maximizing the credit market in this economy.

Dubey, Geanakoplos and Shubik (2005) show that in presence of incomplete markets,[11] assuming that certain contingencies cannot be written into contracts, the intermediate level of penalty that encourages some amount of bankruptcy provides a higher level of individual credit and welfare in the economy. Let us return to the two-period economy where the second period has two states of nature and there is only one asset that promises one unit of payment independent of the state of nature. They argue that an agent who defaults on a promise is

[11] The standard debt contract (non-contingent repayment of principal plus interest) that is usually offered to individuals and small businesses makes the market incomplete, since there is no contract that is offered contingent on the successful states of nature.

in effect tailoring the given security and substituting a new security that is closer to his own needs, at the cost of a bankruptcy penalty. With incomplete markets, one set of assets may lead to a socially more desirable outcome than another set. Also, since each agent may be tailoring the same given asset to his special needs, one asset is in effect replaced by as many assets as there are agents, and so the dimension of the asset span is greatly enlarged. A larger asset span is likely to improve the risk-sharing (i.e., the credit market) and the social welfare.

For a better understanding, suppose that the penalty for failure to deliver is zero and the decision whether to pay is voluntary. Thus, a single individual has no economic incentive to pay, since with default he could consume what he should be paying back. In this case nobody would lend. On the other hand, if the penalty is extremely severe, then there will be a high enough penalty that if an individual faces a finite probability that he will be unable to repay, he will not risk taking the loan. In this case nobody would borrow. In summary, when markets are incomplete, a zero penalty lowers or kills the demand for assets (kills the supply of credit) and a large enough penalty kills the supply of assets (kills the demand for credit), so both cases provide an underdeveloped credit-market. The purpose of an intermediate degree of penalty is not to punish the defaulter so as to discourage him from borrowing, but rather to induce him to repay when he is able to. For higher levels of penalty the agent is punished not just for strategic default but for bad luck too, making him negotiate fewer assets due to the possibility of bad realizations of the state of nature.

Therefore the optimal default penalty should never be so high as to make agents transact only when they have disposable endowments to repay the promise. Otherwise, when the penalty is too low, in any situation the debtor will prefer default because his gain more than compensates his penalization. Therefore, an intermediate level of punishment is optimal since it makes debtors choose to repay their debts when they are able to do so, and suffer the penalty when they are not.

Our paper approaches the debtors' problem using similar features, such as incomplete markets, since personal credit and small business credit are both standard debt arrangements (non-contingent repayment of principal plus interest), and the imposition of an exogenous debtors' penalty. In our model the bankruptcy exemption (E) is the exogenous penalty imposed on debtors in case of bankruptcy. In the Appendix B we present a model that describes how the debtors' decision for bankruptcy develops, considering the different levels of punishment provided by the value of the bankruptcy exemption imposed by the U.S. Personal Bankruptcy Law. As a result, we present a set of propositions describing the effects of bankruptcy legislation on the credit market:

Proposition 1 Any value of exemptions above the critical value E^* makes the supply of credit to individuals zero.

Proposition 2 As the bankruptcy exemption decreases, the interest rate charged to individuals declines.

Proposition 3 As the bankruptcy exemption falls, individuals' demand for credit decreases.

Intuitively, the supply of credit depends directly on the punishment level imposed by local legislation. For bankruptcy exemption (E) equal to zero, it rules out the possibility of strategic bankruptcy and increases the seizure of debtors' assets, raising the possibility of fulfillment of debtors' payment promises and consequently diminishing the cost of credit (r). As E increases, the number of the states of nature in which the borrower does not default decreases, since the bigger the exemption level is, the lower is the possibility that the borrower's assets will exceed the exemption level, increasing the possibility of strategic bankruptcy. Such excess of strategic bankruptcy increases the interest rate charged on loans, and at the limit, the borrower has incentive to file for strategic bankruptcy in every state and the supply of credit goes to zero.

Unlike from the supply side standpoint, if the bankruptcy exemption increases (reducing the debtors' punishment), the consumer has more incentive to demand credit. This happens because the cost to build another asset that is more aligned with debtors' interests declines, since they can keep a bigger amount of their personal assets if bankruptcy occurs. Such assets − which allow debtors to file for bankruptcy at the cost of their wealth less the bankruptcy exemption − act as a substitute for the original debt contract. At the limit, if the exemption is unlimited, the cost of bankruptcy goes to zero, making the demand for credit even more attractive. On the other hand, if the bankruptcy exemption goes to zero, individuals can lose everything they have in case of a bad realization of the sate of nature, inhibiting their

demand for credit.

Thus, there is a tradeoff involving the choice of the exemption level: higher levels of exemption increase the demand for credit but also stimulate the moral hazard problem, lowering the supply of credit. On the other hand, lower exemption levels mitigate the moral hazard problem - which expands the supply of credit - but this also has a negative effect on the demand side due to the fear of harsh punishment. The equilibrium level of credit provided by extreme levels of bankruptcy exemption (0 or unlimited) tends to be very low or even zero. An optimal level of bankruptcy exemption E^{**} may exist where the balance of supply and demand for credit provide a higher level of credit and welfare in the economy.

III. Empirical Tests

In this study we analyze data from 1992 to 1999 from the Statistics on Banking, published by the Federal Deposit Insurance Corporation (FDIC), for small business and personal loans in each U.S. state and information on states' bankruptcy exemption to examine the empirical hypothesis. Comparing states, we have 51 observations for a cross-section analysis. Since several changes happened in the levels of bankruptcy exemptions (which determine the debtors' punishment) during the period 1992-1999[12], we test the relationship between the degree of punishment and the level of personal and small business loans with a sample of 408 observations.

[12] See Table A in the Appendix A.

Despite all changes at the bankruptcy exemption after 1999, our analysis is restricted to the 1992-1999 period. The reason is that FDIC loan data for U.S. States are reported by each bank with the geographic location being the bank's headquarters. Until 1999 there is no problem because the Bank Holding Company Act of 1956 prohibited bank holding companies headquartered in one state from acquiring banks in another state. However, the Gramm-Leach-Bliley Financial Services Modernization Act of November 12, 1999 allowed commercial and investment banks to consolidate, starting a big wave of mergers and acquisitions. This Act rules out the possibility of using loan data broken down by state from 2000 onward.

Most states have separate exemptions for equity in homesteads, personal property like equity in motor vehicles, some amount of cash, jewels, furniture, clothing etc, and a miscellaneous category (wildcard). Some states allow debtors to choose between the state's exemption and the federal exemption. For the empirical tests we use the bigger one. Also, some states allow married couples who file for bankruptcy to raise (or double) their exemptions. Because we are working with aggregate data, we assume that co-applicants are actually married couples[13] and we double (or otherwise raise) the exemptions in states that allow it. Table A in Appendix A lists the homestead and the personal property exemptions[14] in each state in 1992 and their changes until 2005. The table also indicates whether each state allows its residents to use federal exemptions and whether it allows married couples to

[13] As in Lin & White (2001) and Berkowitz & White (2004). Usually, more than 70% of debtors are married (Sullivan (1982)).

[14] The personal property exemption includes dollar values of wildcard exemptions, bank deposits and motor vehicles.

double the exemption. The data on changes in bankruptcy exemptions comes mostly from Elias et al. (1993, 1996, 1999, 2001, 2002, 2004, 2005 and 2006).[15]

The structure of the bankruptcy law and its reform in 1978 benefited our estimation in two different ways. The first is because inside the U.S. there is a well-controlled institutional environment where the only issue that distinguishes the bankruptcy procedure in the American states is the level of bankruptcy exemption, which varies widely across states. Second, the reform in the Personal Bankruptcy Law in 1978 provides a neat natural experiment.

To run our tests we construct a debtors' punishment variable[16] We can define debtors' protection as the sum of homestead and personal property exemptions, that is, how much cannot be taken from the debtor in case of bankruptcy. Notice that this variable is inversely related to the penalty imposed on debtors in their state, because the higher (lower) the debtor exemption, the less (more) the creditor can seize of the debtors' assets. So this variable can be seen as the inverse of debtors' punishment (or the inverse of the creditors' protection). After normalizing the bankruptcy exemption by the lowest level and calculating its inverse, the variable used as the debtors' penalty is:

$$Debtors\prime\ Punishment = \frac{1}{Normalized\ Exemption} \in [0,1].^{17}$$

[15] Some data was also provided by Professor Michelle White, whom we thank.

[16] The option to use this variable instead of bankruptcy exemption was made because the bankruptcy exemption itself does not uniformly affect the population. For example, the majority of the population is highly affected by exemptions from zero to $5,000, while exemptions above $200,000 have a marginal effect on a small share of the population. The debtors' punishment variable works to fulfill this feature.

[17] For states that have an unlimited exemption level, we define the debtors' punishment equals zero.

The same monetary penalty may impose different punishments on the population. This happens because for a given level of bankruptcy exemption, the less wealth the debtor owns, the smaller is the proportion of his wealth that the creditor can take. Therefore, it is also possible to define the debtors' punishment variable as the inverse of the ratio of the sum of the homestead and personal property exemption to each state's median income, because, for example, an exemption of $10,000 in a rich state is a bigger penalty than the same exemption in a poor state. We call this variable as Effective Debtors' Punishment, according to the following formula:

$$Effective\ Debtors'\ Punishment = \frac{1}{Exemption/Median\ Income} \in [0.23; 11.36].$$

The measures of individuals' private credit[18] that we use to run the regressions are:

1. Unsecured Loans:

Credit Card Loans = amount of credit card loans given by financial institutions to individuals divided by Gross State Product;

Credit to individuals = amount of personal loans[19] given by financial institutions to

[18] Our measure of credit market development follows the metric suggested by La Porta et al. (1997, 1998). Those authors used the ratio of the private credit to GDP.

[19] Other loans to individuals for household, family and other personal expenditures (consumer loans) including single payment, installments and all student loans. Included are loans for such purposes as: (1) purchases of private cars, pickups, household appliances, furniture, trailers, and boats; (2) home repairs or

individuals divided by Gross State Product.

2. Secured Loans:

$Mortgage$ = amount of mortgages given by financial institutions to individuals divided by Gross State Product;

$\text{Re}al\ State\ Loans$ = amount of real estate loans[20] given by financial institutions to individuals divided by Gross State Product.

3. Small Business Loans:

$Amount\ of\ Loans\ Less\ than\ \$250,000$ = amount of loans of \$250,000 or less given by financial institutions to small businesses divided by Gross State Product;

$Amount\ of\ Loans\ between\ \$250,000\ and\ \$1 Million$ = amount of loans between \$250,000 and \$1,000,000 given by financial institutions to small businesses divided by Gross State Product.

To investigate the nonlinear shape of the relationship between each measure of credit market development and debtors' punishment, we estimate the following equation:

$$y = f(x) + u,$$

improvements (not secured by the realty); (3) educational expenses, including student loans; (4) medical expenses; (5) personal taxes; (6) vacations; (7) consolidation of personal (nonbusiness) debts; (8) purchases of real estate or mobile homes (not secured by real estate) to be used as a residence by the borrower's family; and (9) other personal expenditures.

[20]Loans secured primarily by real estate (whether originated by the bank or purchased) as evidenced by mortgages, deeds of trust, land contracts, or other instruments.

such that $E(u/x) = 0$ and $E(u^2/x) < \infty$, implying that $E(y/x) = f(x)$. Thus, an estimation for $f(x)$ gives us an estimator of the expectation of y conditional on x.

To do this, we regress the logarithm[21] of each measure of private credit market development (personal and small business loans) on the punishment variable, its square and other control variables.

To test our hypothesis, one possibility is to analyze whether differences in punishment levels across states affect the volume of credit. However, the pooled cross-section results are vulnerable to criticism because the punishment variables may be acting as proxies for non-bankruptcy variables at the state level which are omitted from the regression. The usual response to this problem in the program evaluation literature has been to use panel data rather than single year cross-section data and to introduce both state and year fixed effects[22]. Using panel data with fixed effects, the cross-section fixed effects will capture the effect of variation across states on the punishment levels, while the punishment variables themselves will capture only the effects of changes in the punishment level between 1992 and 1999.

We report results using the following specifications:

[21] Because the distribution of personal and small business loans are right-skewed, we use the natural logarithm of personal loans as the dependent variable in our specification.

[22] The state fixed effects control for state-specific factors that are fixed over time, and the year fixed effects control for factors that vary over time but are common across all states.

$$\ln(Loans_{it}) = \alpha_i + \psi_t + \beta_1(punishment_{it}) + \beta_2(punishment_{it})^2 + \boldsymbol{\beta}\mathbf{X}_{it} + \varepsilon_{it} \quad (1)$$

$$\ln(Loans_{it}) = \alpha + \beta_1(punishment_{it}) + \beta_2(punishment_{it})^2 + \boldsymbol{\beta}\mathbf{X}_{it} + \varepsilon_{it} \quad (2)$$

Then, we re-estimate the equations (1) and (2) for all measures of credit market development, replacing debtors' punishment by effective debtors' punishment:

$$\ln(Loans_{it}) = \alpha_i + \psi_t + \beta_1(ef.pun_{it}) + \beta_2(ef.pun_{it})^2 + \boldsymbol{\beta}\mathbf{X}_{it} + \varepsilon_{it}. \quad (3)$$

$$\ln(Loans_{it}) = \alpha + \beta_1(ef.pun_{it}) + \beta_2(ef.pun_{it})^2 + \boldsymbol{\beta}\mathbf{X}_{it} + \varepsilon_{it} \quad (4)$$

In the both specifications the vector of control variables is composed by Gross State Product (in logs), population (in logs), previous year's unemployment rate[23], house units (100 thousand) and number of banks. We control for Gross State Product (GSP hereafter) to control for local economic cycles and based on the idea that larger economies may have bigger credit markets because of economies of banking scale. By inserting the population variable we also control for itself and for per capita GSP (log (GSP) - log (population) = per capita GSP). The state unemployment rate in the previous year controls for labor market

[23]The data source of Gross State Product (GSP), population and unemployment rate is the U.S. Bureau of Economic Analysis.

activity and for the potential bankruptcy by bad fortune. The variable house units (100 thousand) controls for states urbanization and the number of banks controls for changes in the local banking structure and competition. We also use dummies for American regions (Far West is the excluded category)[24] in a pooled cross-section specification to account for potential geographic variation in credit markets.

The disadvantage of this approach, the parametric method, is the imposition of a functional form on the model, which may generate problems relative to poor specification. To check the robustness of our results, we run semi-parametric regressions in addition to the parametric regressions. To implement this method we follow two steps: first, we regress the dependent variable that measures the credit market development on the set of controls;[25] then, using the non-parametric method[26] we regress the residuals on the punishment variable:

$$E(residuals_{it} \ / \ punishment_{it}) = f(punishment_{it})$$

$$E(residuals_{it} \ / \ ef.\ punishment_{it}) = f(ef.\ punishment_{it}).$$

But there is an important econometric question: Should the exemption levels be endogenous? Exemption levels can be treated as exogenous to the development of the credit-market.

[24] The regions used as dummies are: Mideast, New England, Great Plains, Rocky Mountain, Southeast, Great Lakes, Southwest and Far West.

[25] We use the residuals generated by the two side fixed effects regression (equation (1)).

[26] To run the non-parametric regressions we use the Gaussian kernel, which is defined as $(2\pi)^{-1/2}\exp(-\varepsilon^2/2)$, and a bandwidth ($h_n$) of 0.318. This bandwidth value comes from the fact that $h_n = cn^{-\frac{1}{(k+4)}}$, where n is the sample size and k is the number of densities. The optimal value of the constant c is 1.06. See Bierens (2002).

The U.S. Congress enacted a new Bankruptcy Code in 1978, which specified uniform federal bankruptcy exemptions that were applicable all over the United States, but also allowed the states to opt out of the federal exemptions by adopting their own bankruptcy exemptions. The code went into effect in late 1979, and all the states adopted their own bankruptcy exemptions within a couple of years thereafter, although about one-third of the states allowed their residents to choose between the state exemption and the federal exemption. Since the early 80s, the pattern has been that only a few states have changed their exemption levels each year, mainly to correct nominal exemption levels for inflation. From 1992 to 1999, states changed their homestead exemptions 13 times and changed their personal property exemptions 14 times. Many of these changes were very small. In addition, the federal bankruptcy exemption was raised in 1994 and 1998 and this effectively raised the exemption levels in six states that allow their residents to use the federal exemptions. The fact that most states adopted their bankruptcy exemptions within a short period after the code went into effect and that few states have changed their exemption levels each year since then suggests that individual states' bankruptcy exemptions can be treated as exogenous to the state credit market behavior.

A. Tests for Personal loans

Table I reports the coefficient values of running equations (1), (2), (3) and (4), aiming at explain the relationship between individual unsecured credit market development and

debtors' punishment (or creditors' protection). For both types of loans (credit card loans and credit to individuals) and econometric specifications, the coefficients describing debtors' punishment are highly significant, and since the first coefficient is positive and the second is negative, the relationship has a concave form. Only for specification [3], for credit to individuals, is the coefficient of effective debtors' punishment not significant.

Table I: The impact of Punishment on Unsecured Credit

This table presents the results of panel robust regressions of the unsecured credit (credit card measured as ln(credit card/Gross State Product) and credit to individuals measured as ln(credit to individuals/Gross State Product)) on Debtors' Punishment variable. We control for factros that may vary either accross states and time as local economic cycles (ln(Gross State Product) and unemployment (lagged one year), population (ln(Population)), local banking competition (Number of Banks) and urbanization (Hundred Thousand of House Units). P-values are given in brackets

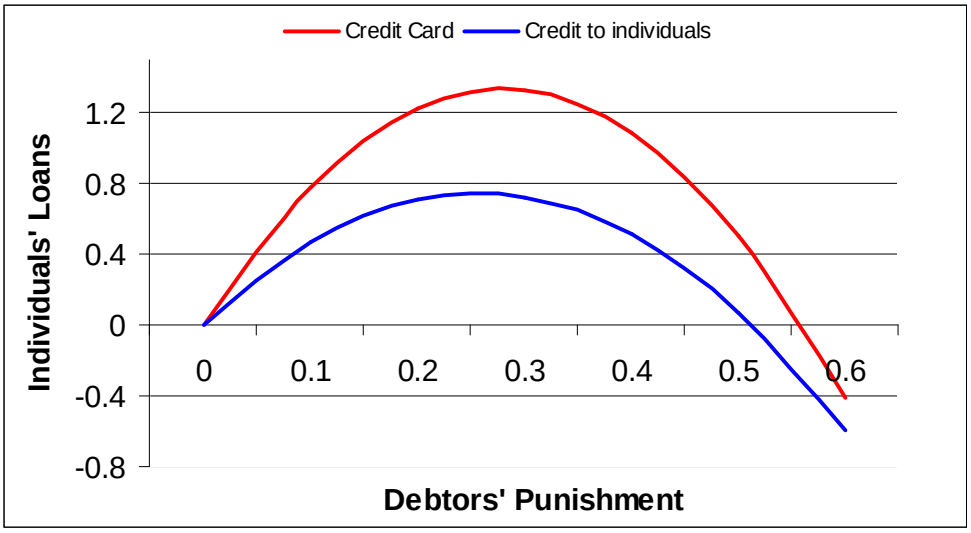
Dependent Variable:	**Credit Card**				**Credit to Individuals**			
	[1]	[2]	[3]	[4]	[1]	[2]	[3]	[4]
Intercept	-47.650	4.510	-49.700	2,466	-15.470	1.45	-17.650	0.009
	[0.099]	[0.150]	[0.102]	[0.418]	[0.463]	[0.462]	[0.415]	[0.996]
Debtors' Punishment	9.530	3.890			5.830	2.59		
	[0.005]	[0.000]			[0.000]	[0.000]		
Debtors' Punishment^2	-17.040	-3.670			-11.360	-2.56		
	[0.001]	[0.002]			[0.000]	[0.000]		
Effetive Debtors' Punishment			0.539	0.448			0.161	0.288
			[0.008]	[0.000]			[0.146]	[0.000]
Effetive Debtors' Punishment^2			-0.106	-0.045			-0.038	-0.030
			[0.000]	[0.000]			[0.005]	[0.000]
lnGSP	-0.450	-0.570	-0.150	-0.483	-0.500	-1.62	-0.157	-1.58
	[0.622]	[0.102]	[0.869]	[0.174]	[0.361]	[0.000]	[0.775]	[0.000]
lnPopulation	3.360	-0.008	3.370	-0.010	1.340	1.03	1,131	1.05
	[0.107]	[0.983]	[0.133]	[0.979]	[0.381]	[0.000]	[0.398]	[0.000]
Unemployment(-1)	-0.164	-0.663	-0.120	-0.620	-0.143	-0.39	-0.106	-0.370
	[0.025]	[0.000]	[0.087]	[0.000]	[0.003]	[0.000]	[0.022]	[0.000]
House Units (100 thousand)	-0.163	0.028	-0.166	0.027	-0.061	0.02	-0.065	0.020
	[0.024]	[0.000]	[0.022]	[0.000]	[0.176]	[0.000]	[0.146]	[0.000]
Number of Banks	0.001	0.001	0.001	0.001	0.0002	0.0002	0.0002	0.0004
	[0.001]	[0.002]	[0.001]	[0.007]	[0.020]	[0.198]	[0.021]	[0.084]
States Fixed Effects	Yes	No	Yes	No	Yes	No	Yes	No
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dummy of Regions	No	Yes	No	Yes	No	Yes	No	Yes
R-Square	0.14	0.3	0.16	0.29	0.15	0.28	0.13	0.36
Number of Obsevations	408	408	408	408	408	408	408	408

Figure 3 illustrates the non-monotonic shape of the relation using the coefficients from specification [1]. It shows that there is an intermediate penalty that is optimal for the development of state credit markets. Similar shapes hold for specifications [2], [3] and [4].

Note that as we claim in the theoretical section, there is an intermediate level of debtors' punishment – and consequently of creditors' protection – that maximizes the level of personal credit in the economy. For higher levels of punishment (lower exemptions), the demand for credit is inhibited, since debtors fear the consequences of bankruptcy (proposition 3), producing an underdeveloped personal credit market. As the punishment declines, the demand for credit is encouraged due to the availability of a new assets with the option of no-repayment at a lower cost (bankruptcy cost), and although the terms offered by the lenders tend to worsen (see proposition 2), the equilibrium level of credit will increase. As the punishment approaches zero, debtors' higher incentive to file for bankruptcy strategically and the lower expected recovery of creditors reduce (or even kill) the supply of credit (see proposition 1). Therefore, there is an intermediate level that is optimal for credit market development.

Figure 3: Debtors' Punishment x Personal Unsecured Loans/GSP

Parametric Approach



Thus, the optimal level of debtors' punishment using the result obtained by the regressions [1] from Table I is 0.2796 and 0.2566 for credit card and individuals' loans respectively, in a measure between zero and one. Moreover, since the bankruptcy exemption is a function of debtors' punishment, in monetary terms a personal bankruptcy law that exempts debtors between $19,670 and $21,434 tends to maximize the development of the unsecured credit market. It is not optimal for the economy for punishment to be either sufficiently harsh or sufficiently lenient.

Optimal level of punishment and exemption

	Credit Card	*Credit to Individuals*
optimal debtors' punishment	0.2796	0.2566
optimal bankruptcy exemption	$\$19,670$	$\$21,434$

Table II: The impact of Punishment on Secured Credit

This table presents the results of panel robust regressions of the secured credit (mortgage to individual measured as ln(mortgage/Gross State Product) and total real estate loans to individuals measured as ln(real estate loans to individual/Gross State Product)) on Debtors' Punishment variable. We control for factros that may vary either accross states and time as local economic cycles (ln(Gross State Product) and unemployment (lagged one year), population (ln(Population)), local banking competition (Number of Banks) and urbanization (Hundred Thousand of House Units). P-values are given in brackets

Dependent Variable:	**Mortgage**				**Real Estate Loans to Individuals**			
	[1]	[2]	[3]	[4]	[1]	[2]	[3]	[4]
Intercept	-24.900	-6.460	-29.760	-6.950	-20.640	-4.36	-22.060	-5.350
	[0.242]	[0.000]	[0.206]	[0.000]	[0.299]	[0.000]	[0.288]	[0.000]
Debtors' Punishment	5.600	1.880			4.190	1.85		
	[0.000]	[0.000]			[0.000]	[0.000]		
Debtors' Punishment^2	-8.660	-2.220			-6.587	-1.941		
	[0.000]	[0.000]			[0.000]	[0.000]		
Effetive Debtors' Punishment			0.321	0.167			0.269	0.172
			[0.001]	[0.000]			[0.001]	[0.000]
Effetive Debtors' Punishment^2			-0.030	-0.020			-0.031	-0.018
			[0.002]	[0.000]			[0.000]	[0.000]
lnGSP	-1.910	-1.100	-1.740	-1.040	-0.638	-1.270	-0.533	1.210
	[0.006]	[0.000]	[0.010]	[0.000]	[0.162]	[0.000]	[0.231]	[0.000]
lnPopulation	3.160	1.110	3.230	1.080	1.780	1.170	1.800	1.150
	[0.069]	[0.000]	[0.069]	[0.000]	[0.232]	[0.000]	[0.247]	[0.000]
Unemployment(-1)	-0.125	-0.122	-0.099	-0.106	-0.047	-0.114	-0.030	-0.100
	[0.014]	[0.001]	[0.035]	[0.004]	[0.243]	[0.000]	[0.438]	[0.000]
House Units (100 thousand)	-0.040	0.033	-0.048	0.003	-0.023	0.010	-0.028	0.008
	[0.315]	[0.200]	[0.218]	[0.282]	[0.455]	[0.000]	[0.357]	[0.000]
Number of Banks	0.000	0.001	0.000	0.000	0.0000	0.0003	0.0000	0.0002
	[0.831]	[0.008]	[0.865]	[0.043]	[0.476]	[0.010]	[0.357]	[0.045]
States Fixed Effects	Yes	No	Yes	No	Yes	No	Yes	No
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dummy of Regions	No	Yes	No	Yes	No	Yes	No	Yes
R-Square	0.1	0.43	0.09	0.42	0.07	0.51	0.07	0.48
Number of Obsevations	408	408	408	408	408	408	408	408

Bankruptcy exemptions can also affect the incentive to incur secured debt, even though unsecured debts seem more likely to be affected by the legislation. The reason is that debtors are able to arbitrage debts across categories and thereby increase their benefit from

exemptions. Debtors can increase their credit card or personal loans in order to pay their secured credit. For states with harsh punishment, the demand for unsecured credit is low, and as consequence the incentive to use unsecured credit to pay secured credit is reduced, inhibiting the demand for secured credit. On the other hand, states with weaker punishment have lower access to credit also, but in this case, due to the supply side. The limited access to unsecured credit reduces the possibility of using such loans in order to repay secured credit. Thus, we can expect similar results for the relation between debtors' punishment and secured credit.

Table II shows the results of the same tests but using measures of secured loans the as dependent variable. For both types - mortgage loans and all real estate loans - and econometric specifications, the coefficients describing debtors' punishment are significant at the 1% level, and the signs are consistent with the theory, pointing to a concave form.

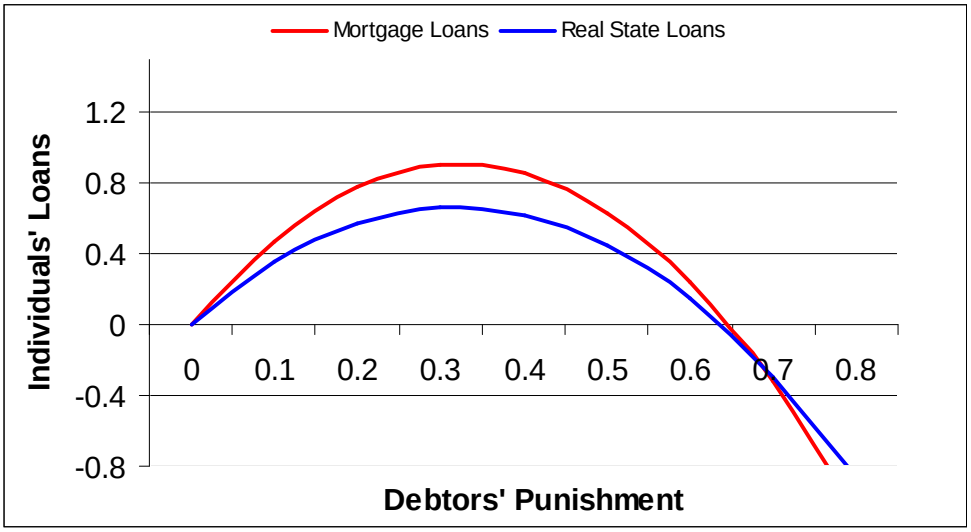
Figure 4 illustrates the non-monotonic shape of the relation using the coefficients from specification [1], showing that there is an intermediate penalty that is optimal for the development of the states' credit markets. Similar shapes hold for specifications [2], [3] and [4].

As for the case of unsecured loans, the optimal level of debtors' punishment using the result obtained by regression [1] from Table II is 0.3233 and 0.3180 for mortgage loans and real estate loans respectively, in a measure between zero and one. This means that in monetary terms, a bankruptcy exemption between \$17,012 and \$17,295 tends to maximize

the development of the secured credit market.

Figure 4: Debtors' Punishment x Personal Secured Loans/GSP

Parametric Approach



Optimal level of punishment and exemption

	Mortgage	Re*al Estate Loans*
optimal debtors' punishment	0.3233	0.3180
optimal bankruptcy exemption	$\$17,012$	$\$17,295$

To check the robustness of the functional form used in our parametric regression, we now present the semi-parametric results of the relationship between unsecured and secured credit market development and debtors' punishment (see Figures 5 and 6).[27] Notice that qualitatively the results do not change, which means that the maximal level of credit market

[27] We report the results referring to: specification (1), without the punishment variable, at the first stage of the method; non-parametric regression between debtors' punishment and the residuals of the first stage regression at the second stage. The changes are marginal using (2), (3) and (4) at the first stage and/or regressing effective debtors' punishment on the residuals of the first stage regression at the second stage.

development for individuals is reached with an intermediate level of debtors' punishment.

Figure 5: Debtors' Punishment x Personal Unsecured Loans/GSP

Semi – Parametric Approach

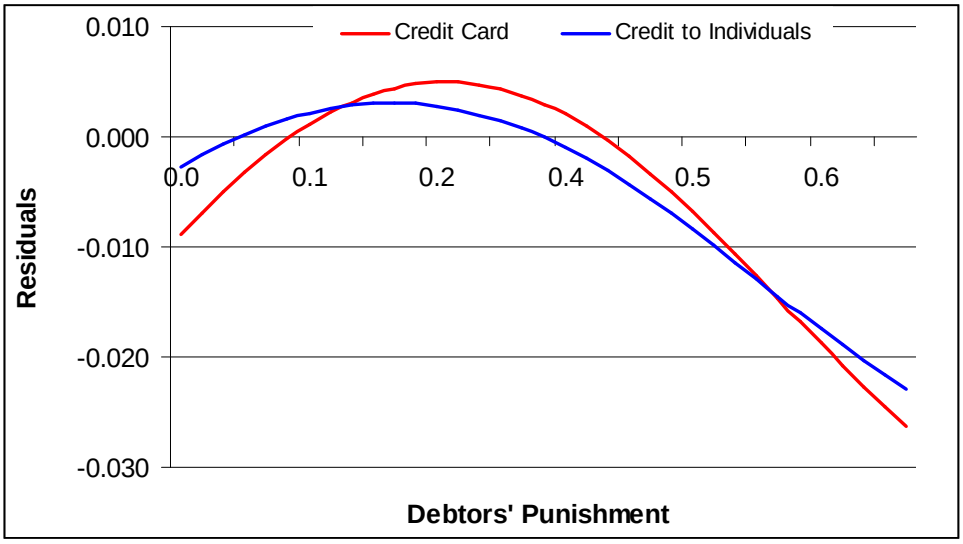
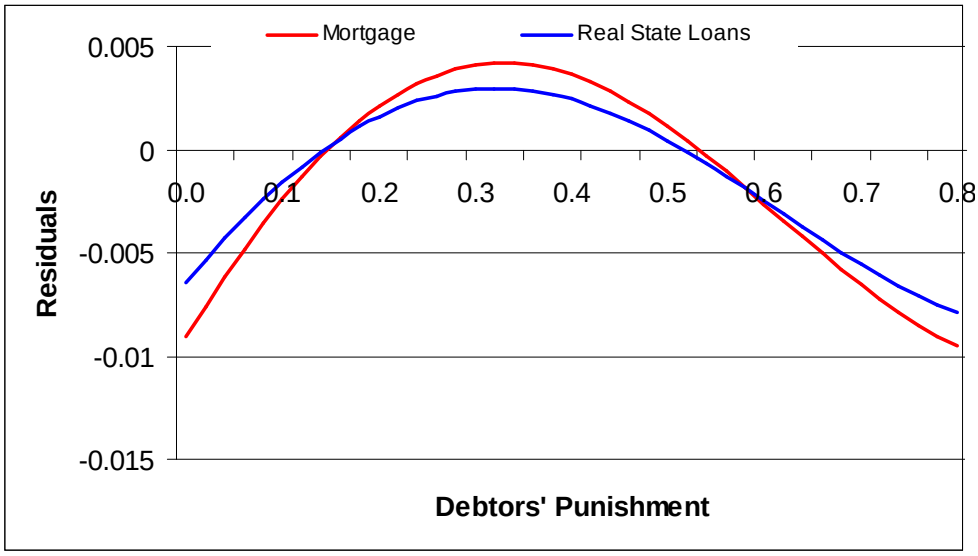


Figure 6: Debtors' Punishment x Personal Secured Loans/GSP

Semi – Parametric Approach



B. Tests for Small Businesses' loans

The personal bankruptcy law may also apply to small businesses and not just to individuals. The debts of unincorporated firms are personal liabilities of the owners, so that lending to the firm is legally equivalent to lending to the owner. In such case, if the firm fails, the owner can file for bankruptcy and his business and unsecured personal debts will be discharged. Thus, we can expect the same incentive structure behind this credit market and the same relationship with the debtors' punishment variable.

Table III shows the impact of debtors' punishment on small business credit, following the specifications (1) to (4). For all cases − except for regression (3) − the coefficients describing debtors' punishment are significant at the 5% level, and since the first coefficient is positive and the second is negative, the relationship has a concave form. Therefore, there is an intermediate punishment that maximizes the volume of loans for small businesses. Figure 7, which illustrates the shape of this relation, shows the intermediate penalty that is optimal for the development of the small businesses credit market.[28] The intuition behind this result is the same as that in the personal loan case.

[28] The coefficients used to illustrate the relationship are from the regression with fixed effects.

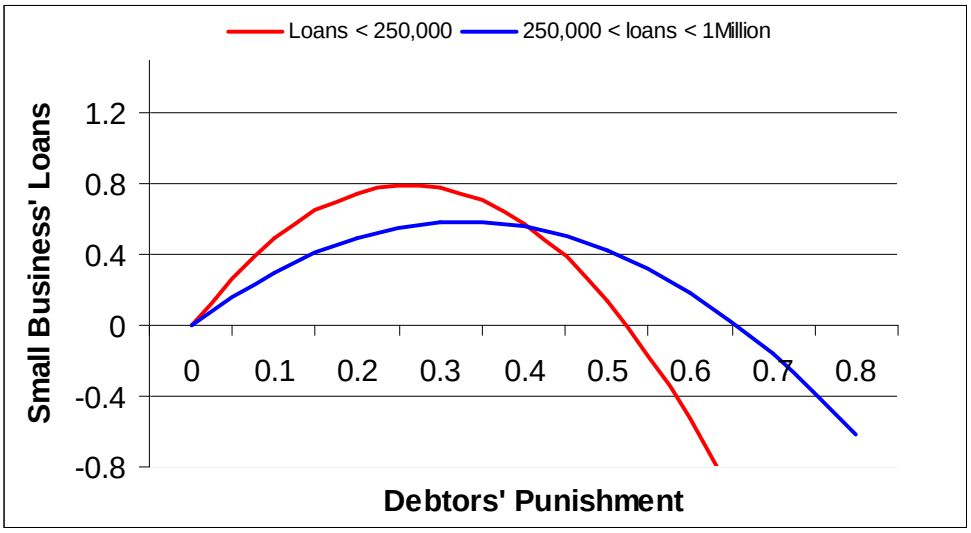
Table III: The impact of Punishment on Small Business Credit

This table presents the results of panel robust regressions of the small business credit (loans less than US$ 250.000 measured as ln(loans less than US$ 250.000/Gross State Product) and loans between US$ 250.000 through US$ 1 million measured as ln(loans between US$ 250.000 through US$ 1 million/Gross State Product)) on Debtors' Punishment variable. We control for factros that may vary either accross states and time as local economic cycles (ln(Gross State Product) and unemployment (lagged one year), population (ln(Population)), local banking competition (Number of Banks) and urbanization (Hundred Thousand of House Units). P-values are given in brackets

Dependent Variable:	**Loans less than US$250.000**				**Loans between US$ 250.000 through US$ 1 Million**			
	[1]	[2]	[3]	[4]	[1]	[2]	[3]	[4]
Intercept	21.670	-2.960	16.140	-2.990	19.410	-4,950	16.300	-4.950
	[0.299]	[0.003]	[0.492]	[0.003]	[0.212]	[0.000]	[0.323]	[0.000]
Debtors' Punishment	6.050	0.867			3.550	0.511		
	[0.002]	[0.006]			[0.020]	[0.019]		
Debtors' Punishment^2	-11.540	-1.100			-5.400	-0.648		
	[0.000]	[0.001]			[0.005]	[0.006]		
Effetive Debtors' Punishment			0.004	0.077			0.167	0.046
			[0.973]	[0.010]			[0.065]	[0.030]
Effetive Debtors' Punishment^2			-0.018	-0.010			-0.017	-0.006
			[0.103]	[0.000]			[0.021]	[0.004]
lnGSP	-0.940	-2.240	-0.426	-2.250	-0.520	-1,430	-0.380	-1.440
	[0.018]	[0.000]	[0.336]	[0.000]	[0.206]	[0.000]	[0.365]	[0.000]
lnPopulation	-0.978	1.660	-0.990	1.670	-1,255	1,130	-1,149	1.130
	[0.505]	[0.000]	[0.545]	[0.000]	[0.287]	[0.000]	[0.356]	[0.000]
Unemployment(-1)	-0.028	-0.110	0.016	-0.108	0.052	-0.074	0.073	-0.072
	[0.503]	[0.000]	[0.690]	[0.000]	[0.190]	[0.000]	[0.048]	[0.001]
House Units (100 thousand)	0.000	0.008	-0.006	0.008	0.020	0.006	0.016	0.006
	[0.994]	[0.000]	[0.828]	[0.001]	[0.410]	[0.000]	[0.507]	[0.000]
Number of Banks	0.000	0.001	0.000	0.001	0.0000	0.0006	0.0000	0.0006
	[0.846]	[0.000]	[0.789]	[0.000]	[0.709]	[0.000]	[0.730]	[0.000]
States Fixed Effects	Yes	No	Yes	No	Yes	No	Yes	No
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dummy of Regions	No	Yes	No	Yes	No	Yes	No	Yes
R-Square	0.46	0.81	0.40	0.82	0.10	0.67	0.08	0.67
Number of Obsevations	357	357	357	357	357	357	357	357

Figure 7: Debtors´ Punishment x Small Businesses' Loans/State GDP

Parametric Approach



Based on the result obtained by the regression [1], the optimal level of debtors' punishment is 0.2621 and 0.3287 for small business loans less than $250,000 and from $250,000 through $1,000,000 respectively, in a measure between zero and one, which means that an intermediate level of punishment tends to provide expansion of the small business credit market.

Optimal level of punishment and exemption

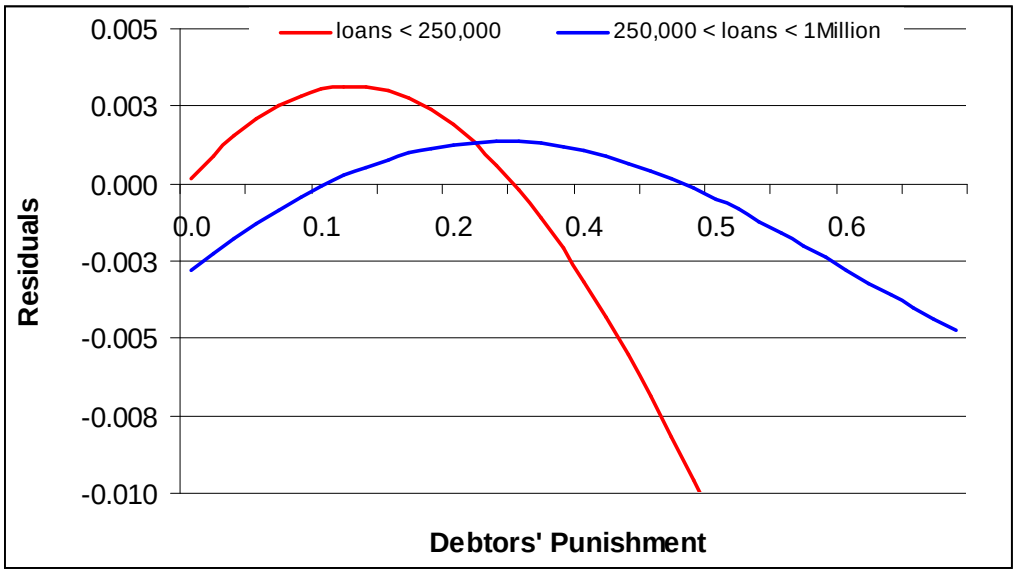
	$loans < \$250,000$	$\$250,000 < loans < \$1 Million$
optimal debtors' punishment	0.2621	0.3287
optimal bankruptcy exemption	$\$20,984$	$\$16,732$

As in the personal loan case, to check the robustness of the functional form we also present the semi-parametric results for the relationship between the small business credit

market and debtors' punishment (see Figure 8).[29] Again, qualitatively the results do not change, which means that the maximal level of small business credit is reached with an intermediate level of debtors' punishment.

Figure 8: Debtors' Punishment x Small Business' Loans/State GDP

Semi – Parametric Approach



C. The optimal level of Debtors' Punishment

To summarize our results, in this section we report the confidence interval of the optimal level of punishment for each measure of credit market development. Also, we answer the following questions: Are there many states above (or below) the optimal punishment? How do states rank in terms of punishment?

[29] We report the results referring to: specification (1), without the punishment variable, at the first stage of the method; non-parametric regression between debtors' punishment and the residuals of the first stage regression at the second stage. The changes are marginal using (2), (3) and (4) at the first stage and/or regressing effective debtors' punishment on the residuals of the first stage regression at the second stage.

Table IV presents the confidence interval for the optimal level of debtors' punishment using the results obtained from specification [1] for each credit market measure. Moreover, since the bankruptcy exemption is a function of debtors' punishment, we can calculate the confidence intervals for the levels of bankruptcy exemptions (see Table V).

Table IV: Confidence Interval (at 90% of confidence) of the optimal level of punishment (between 0 and 1)

	Lower Bound	Optimal Level	Upper Bound
Credit Card [1]	0.235	0.280	0.315
Credit to Individuals [1]	0.218	0.257	0.287
Mortgage [1]	0.294	0.323	0.349
Real State Loans [1]	0.285	0.318	0.346
Loans less than USD250,000 to Small Business [1]	0.199	0.262	0.307
Loans between USD250,000 throught USD1 Million to Small Business [1]	0.257	0.329	0.385
Overall	0.199		0.385

The results say that with 90% confidence the bankruptcy exemption level for an American state to maximize, for example, the credit card market should belong to the interval $(\$17,460; \$23,404)$. We performed the same procedure for all credit market measures. Thus, considering all types of credit, the optimal bankruptcy exemption should belong to the interval $(\$14,260; \$27,638)$. Observe that it is not economically optimal for punishment to be either sufficiently harsh or sufficiently lenient.

Table V: Confidence Interval (at 90% of confidence) of the optimal level of bankruptcy exemption (USD)

	Lower Bound	Optimal Level	Upper Bound
Credit Card [1]	17,460	19,670	23,404
Credit to Individuals [1]	19,163	21,434	25,246
Mortgage [1]	15,759	17,012	18,707
Real State Loans [1]	15,896	17,295	19,298
Loans less than USD250,000 to Small Business [1]	17,915	20,984	27,638
Loans between USD250,000 throught USD1 Million to Small Business [1]	14,260	16,732	21,400
Overall	14,260		27,638

In 1992, 16 states in the U.S. applied punishments to debtors within the interval $(0.199; 0.385)$, while 24 applied punishments below this range and 11 above it. By 2005 the set of states with punishments below the optimal range had increased dramatically to 37, while the number states with punishments both within and above the optimal range had fallen to seven. Thus, the most significant feature is that there are several states that apply extremely high bankruptcy exemptions, giving a strong incentive to file for bankruptcy. Table VI ranks the states in terms of the current debtors' punishment.

Table VI: Ranking of States in terms of Punishment

State	2005 Debtors' Punishment	2005 Bankruptcy Exemption (USD)	2008 Bankruptcy Exemption (USD)
Ohio	0.81	$6,800	$6,800
Kentucky	0.65	$8,500	$8,500
Maryland	0.50	$11,000	$11,000
South Carolina	0.49	$11,200	$11,200
Tennessee	0.48	$11,500	$11,500
Virginia	0.46	$12,000	$12,000
Nebraska	0.44	$12,500	$12,500
Alabama	0.34	$16,000	$16,000
Missouri	0.29	$19,250	$19,250
Wyoming	0.25	$22,400	$22,400
North Carolina	0.24	$22,500	$22,500
Indiana	0.24	$23,000	$23,000
Louisiana	0.22	$25,000	$25,000
Georgia	0.20	$27,600	$27,600
Hawaii	0.17	$32,575	$32,575
Illinois	0.15	$36,400	$36,400
Maine	0.14	$40,400	$40,400
Wisconsin	0.13	$42,200	$42,200
Utah	0.13	$42,500	$42,500
Washington	0.12	$44,500	$44,500
District of Columbia	0.12	$44,750	$44,750
Michigan	0.12	$44,750	$44,750
New Jersey	0.12	$44,750	$44,750
Pennsylvania	0.12	$44,750	$44,750
Delaware	0.11	$50,000	$50,000
Oregon	0.11	$51,350	$51,350
West Virginia	0.10	$53,200	$53,200
Idaho	0.10	$53,800	$53,800
New York	0.10	$54,900	$54,900
New Mexico	0.09	$64,500	$64,500
Alaska	0.08	$73,000	$73,000
California	0.07	$80,950	$80,950
North Dakota	0.07	$81,200	$81,200
Mississippi	0.06	$85,000	$85,000
Colorado	0.06	$93,000	$93,000
Montana	0.05	$102,500	$102,500
New Hampshire	0.05	$105,000	$105,000
Arkansas	0.04	$152,500	$125,000
Connecticut	0.04	$157,000	$125,000
Vermont	0.03	$160,300	$125,000
Arizona	0.03	$203,800	$125,000
Minnesota	0.03	$210,000	$125,000
Rhode Island	0.02	$365,000	$125,000
Nevada	0.01	$501,125	$125,000
Massachusetts	0.00	unlimited	$125,000
Florida	0.00	unlimited	$125,000
Iowa	0.00	unlimited	$125,000
Kansas	0.00	unlimited	$125,000
Oklahoma	0.00	unlimited	$125,000
South Dakota	0.00	unlimited	$125,000
Texas	0.00	unlimited	$125,000

It can be seen that between 1991 and 1998 the median net value of holdings[30] of an individual fluctuated within a fairly narrow range from $40,000 to $46,000.[31] By applying the optimal punishment it is possible to provide both a fresh start to failed debtors – since they will retain approximately $20,000 of their assets – and a significant recovery to lenders (between $20,000 - $26,000) since the median amount of debts that debtors hold when they file for Chapter 7 bankruptcy is approximately $32,000[32] (between 62% and 82% of the debt). However, because of the higher levels of exemptions in most states – which provides weak protection to creditors – what really happens is that debtors are motivated to file for bankruptcy strategically, and creditors do not receive significant repayment (in 20 states the bankruptcy exemption is bigger than the median value of holdings).

To exemplify the effect of changes at debtors' punishment on individuals and small business' credit market, suppose that a state that apply a bankruptcy exemption of 200,000 dollars, like Minnesota in 1997, decide to modify its bankruptcy exemption to the optimal level (approximately 20,000), increasing the creditors' protection. Such change, according to the regression results, tends to produce an increase of: 466% in the credit card loans; 77% in the credit to individuals; 107% in the mortgage loans; 110% in the real state loans; 85% in the small business loans less than $250,000 and 61% in the small business loans between $250,000 and $1million. On the other side (higher levels of punishment), if, for example,

[30] Values in constant 1997 levels.

[31] See Orzechowski, S. and Sepielli, P. (2003)

[32] See Barron, J. M. and Staten, M. E. (1997)

Nebraska decide to modify its exemption raising it from $12,500 to $20,000, reducing the creditors' protection, the state tends to increase its private credit to GSP ratio in: 53% for the credit card loans; 40% for the credit to individuals; 12% for the mortgage loans; 10% for the real state loans; 42% for the small business loans less than $250,000 and 6.6% for the small business loans between $250,000 and $1million.

IV. Conclusion

The current debate stresses the relevancy of striking a balance between giving a fresh start when debtors default due to bad fortune and the incentives for them to repay debts.

In the theoretical field, Dubey, Geanakoplos and Shubik (2005), using a general-equilibrium model with incomplete markets, showed that an intermediate level of penalty to debtors in case of bankruptcy is optimal in the sense that it provides a higher level of personal credit and individual welfare in the economy. In this paper we approached this issue empirically, taking advantage of changes provided by the Personal Bankruptcy Reform Act of 1978, which redefined the degree of penalty imposed on debtors in case of bankruptcy through the bankruptcy exemption.

The early literature on credit market development showed how important the incentive to repay is for this development. However, when dealing with credit markets, consideration must go to the trade-off between the incentive to repay the debt to reduce moral hazard and the need to protect borrowers from the bad state of nature, to allow a fresh-start.

To analyze this issue, we started with the theory that provides some predictions about the behavior of the supply and demand for credit. On the supply side, the theory predicts that as the debtors' punishment (or creditors' protection) diminishes, the interest rates charged to borrowers increase, and when it is sufficiently low the supply of credit disappears. This is explained by the lower expected repayment and the higher possibility of strategic bankruptcy. On the demand side, the fear of extremely harsh punishment in bankruptcy states makes debtors avoid borrowing, reducing their demand for credit. Therefore, the equilibrium volume of credit is a non-monotonic function of the debtors' punishment levels (or creditors' protection levels), suggesting that there is an intermediate level of punishment that maximizes credit market development.

Then we investigated empirically the effect of debtors' punishment on the personal and small business credit market. We found a non-monotonic relationship between debtors' punishment and credit market development. Moreover, there is an intermediate level of debtors' punishment that maximizes the private credit to GDP ratio for personal loans (unsecured and secured) and small business loans. This means that lower levels of debtors' punishment (poorer creditors' protection) provide an incentive for bankruptcy, which produces a negative effect on the supply of credit, since lenders' expected repayment is lower. On the other hand, higher levels of debtors' punishment (higher creditors' protection) impose harsh penalties on debtors in case of bankruptcy, inhibiting their demand for credit due to the fear of bad states of nature. Therefore, the optimal punishment is the one that allows a fresh start for debtors

and a significant recovery for lenders in case of bankruptcy.

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Appendix A

In this appendix we build a model that describes how the debtors' decision for bankruptcy develops, considering the different levels of punishment provided by the value of the bankruptcy exemption imposed by the Personal Bankruptcy Law.

The Model Consider a consumer who lives for two periods and maximizes utility over her consumption c. The consumer born with some amount of durable goods of value D (like a house, a car, etc) that she consumes in both periods, but it depreciates at rate δ. Period 1 income w_1 is observed but the second period income is uncertain, varying according to the realization of the states of nature, thus $w_{2s} \in [w_{21}, ..., w_{2S}]$. Each state occurs with probability p_s, where $p_s > 0 \ \forall s$ and $\sum_s p_s = 1$.The wage is free observed by the borrower, but the lender may verify its value at a monitoring cost proportional to the borrowed amount

B. The monitoring cost will be denoted by γB.[33]

There is a large number of agents divided in two different groups: borrowers and lenders. Borrowers may be thought as consumers and lenders as the financial institution that offers a standard debt contract.[34] Each lender is endowed with enough money to supply credit to consumers. Such lenders' endowment may be used either to lend to a borrower with rate r, or to purchase a risky-free asset paying an exogenously given rate of return r_f.

If the borrowers report bankruptcy, part of the debt will be discharged, and some of the individuals' assets, including personal goods (D) and their present income will be exempted up to the amount E. The bankruptcy law determines the level of E exogenously, and accordingly we call E the bankruptcy exemption level in this paper. The debt contract is subject to this bankruptcy law. Notice that part of borrowers' goods serves as an informal collateral imposed by the law to unsecured credit.

Definition 1 *Strategic bankruptcy*[35]*: It occurs when the borrower has enough wealth to pay her debts but she chooses not to do it.*

Definition 2 *Bankruptcy by bad fortune: It occurs when the realization of states of nature is bad in such way that borrowers are unable to fulfill their repayment promises.*

[33] A similar model applies to small businesses. Suppose that, instead of a two period economy, there is only one time period where the small firms' owners choose an amount B to invest at their project. The output is uncertain $w_s B^{\alpha}$, varying according the realization of the state of nature w_s. At this set up we reach the same results that the consumption model.

[34] Townsend (1979) and Williamson (1986, 1987) show that the standard debt contract is the optimal contract for competitive financial market condition.Ying Yan (1996) shows that the standard debt contract is the optimal debt contract for non-competitive financial market condition.

[35] *Moral hazard enters the picture because borrowers have a choice not to repay their debts.*

The consumption of the first period defines the level of debt B at the beginning of period 2:

$$B = (c_1 - D - w_1),$$

which means that the agent consumes more than the sum of her wage and durable goods.

A loan contract between the borrower and the lender consists of a pair (r, B), where B is the loan volume and $(1 + r)$ the loan rate, subject to the legal imposition on the exemption level E that applies to the situation in which the borrower does not repay the debt $(1+r)B$.

If at least some debt will be held, so that $B > 0$, we can divide the borrowers' actions in three distinct choices:

C1 does not file for bankruptcy if: $w_{2s}+\delta D \geq (1+r)B$ and $(1+r)B \leq \max(w_{2s}+\delta D-E, 0)$

C2 strategic bankruptcy if: $w_{2s} + \delta D \geq (1 + r)B$ and $(1 + r)B > \max(w_{2s} + \delta D - E, 0)$

C3 bad fortune bankruptcy if: $w_{2s} + \delta D < (1 + r)B$ (and therefore $(1 + r)B > \max(w_{2s} + \delta D - E, 0))$

Analyzing the consumer choice for bankruptcy, it is optimal to file for bankruptcy if and only if their gains in bankruptcy are bigger than their gains when they choose not to file for bankruptcy, i.e., if and only if $(1 + r)B > \max(w_{2s} + \delta D - E, 0)$. That is, the consumer will default whenever the second period debt exceeds the level of assets that

can be seized and the debt can not be fully enforced. Therefore the consumer delivery $\min[(1+r)B, \max(w_{2s}+\delta D-E, 0)]$. This way, we can view the probability of no bankruptcy as $(1-p_{bankruptcy}) = p(C1) = \sum_s p_s \iota_s (1-\iota_d)$ and the probability of bankruptcy as $p_{bankruptcy} = p(C2) + p(C3) = \sum_s p_s \left[\iota_s \iota_d + (1-\iota_s)\right]$, where $\iota_s = 1$ if $w_{2s} + \delta D \geq (1+r)B$ and $\iota_d = 1$ if $(1+r)B > \max(w_{2s} + \delta D - E, 0)$.

The wealth in each situation for the borrowers is given as follows:

$$W_2 = \begin{cases} w_2 + \delta D - (1+r)B & \text{if no bankruptcy} \\ \\ w_2 + \delta D - \max(w_{2s} + \delta D - E, 0) & \text{if bankruptcy.} \end{cases}$$

Thus the lender can receive in case of bankruptcy a payment between $w_{2s} + \delta D$ (if the bankruptcy exemption is zero) and zero (if the bankruptcy exemption overcomes the debtors' wealth in the second period).

For the lenders, the expected return on lending must be no less than the risk-free return. Therefore, the lender's participation constraint is:

$$\begin{aligned} (1+r_f)B \leq & \sum_s p_s \iota_s (1-\iota_d)(1+r)B + \\ & + \sum_s p_s \left[\iota_s \iota_d + (1-\iota_s)\right] \left[\max(w_{2s} + \delta D - E, 0) - \gamma B\right]; \end{aligned} \tag{5}$$

The extra interest rate paid $r - r_f$ is exactly the one needed to offset the loss the financial institution makes when the consumer bankrupts: it is the same as a risk premium.

For a menu of the described contracts, the consumer chooses a pair (r, B) that maximizes her expected utility function.

$$\max_{(r,B)} u(c_1) + Eu(c) = u(c_1) + \theta \left[\sum_{s=1}^{S} p_s u(c_{2s}) \right]$$

st (5) *and*

$$c_1 = w_1 + D + B$$

$$c_{2s} = w_{2s} + \delta D - \min[(1+r)B, \max(w_{2s} + \delta D - E, 0)] \quad \forall s$$

The constraint (5) is always valid with equality, since a smaller rate of return r makes the borrower strictly better and still makes the lender's participation constraint valid. Also, since the lender pays the monitoring cost to verify the wage value (w) in bankrupt states, the contract specified above is incentive-compatible in the sense that borrowers do not have incentive in declaring a false state of nature.

Observe that the lenders' expected return, described by their participation constraint, determines the supply of credit in the economy. The supply of credit depends directly on the punishment level imposed by the local legislation.

Proposition 1 *Any value of exemptions above the critical value E^* makes the supply of credit to individuals zero.*

Proof of Proposition 1. Let

$(1+r_f)B = p(C1)(1+r)B + \sum_s p_s \left[\iota_s \iota_d + (1-\iota_s)\right] \left[\max(w_{2s} + \delta D - E, 0) - \gamma B\right]$ be the function that determines the supply of credit. Let E^* be equal $w_{2S} + \delta D$. Thus, for every E above E^* the borrowers will file for bankruptcy in every state of nature since $\iota_d = 1$ for all s, making $p_{bankruptcy} = \sum_{s=1}^{S} p_s = 1$. Also, $\max(w_{2s} + \delta D - E, 0) = 0$, making the supply function $(1+r_f)B = -\gamma B$. The only value of B that satisfies this expression is $B = 0$. ■

Proposition 2 *As the bankruptcy exemption decreases, the interest rate charged to individuals reduces.*

Proof of Proposition 2. Let

$(1+r_f)B = p(C1)(1+r)B + \sum_s p_s \left[\iota_s \iota_d + (1-\iota_s)\right] \left[\max(w_{2s} + \delta D - E, 0) - \gamma B\right]$

Suppose that the bankruptcy exemption E decreases. Thus, $w_{2s} + \delta D - E$ will increase as well as the probability of solvency since there will be more states of nature that $(1+r)B \leq \max(w_{2s} + \delta D - E, 0)$.Both forces work to increase the expected return of lenders. To hold the equality of the supply function it is necessary to reduce r. ■

Differently from the supply side, if the bankruptcy exemption increases (reducing the debtors' punishment), the consumer has more incentive to demand credit. This happens because the cost to build another asset that is more aligned with debtors interests reduces, since they can keep a bigger amount of their personal goods if bankruptcy occurs. Such asset − that allows debtors to file for bankruptcy at a cost of their wealth less the bankruptcy

exemption − acts to substitute te original debt contract. At the limit, if the exemption is unlimited, the cost of bankruptcy goes to zero, making the demand for credit even more attractive. On the other hand, if the bankruptcy exemption goes to zero, individuals can lose everything they have in case of a bad realization of the sate of nature, inhibiting their demand for credit.

Proposition 3 *As the bankruptcy exemption falls, the individuals' demand for credit decreases.*

Proof of Proposition 3. To prove it by contradiction let us suppose that if E increases to E', B decreases. This condition means that $u'_E(c_1) < u'_{E'}(c_1)$, because $w_1 + D + B > w_1 + D + B'$.

By the individuals' maximization problem, if $u'_E(c_1) < u'_{E'}(c_1)$ holds, we have $\sum_{s=h}^{S} p_s u'_E(c_{2s}) < \sum_{s=i}^{S} p_s u'_{E'}(c_{2s})$, where h and i are the worst states of nature that the agent chooses not file for default for E and E' respectively.

But if $B > B'$, the marginal utility at the second period for E is bigger than for E' − that is $u'_E(c_{2s}) > u'_{E'}(c_{2s})$− because $w_{2s} + \delta D - (1+r)B < w_{2s} + \delta D - (1+r)B'$. Also, since E' is bigger, the states of nature that the agents file for default increase (or at least remain the same), thus $i \geq h$ meaning that the debtors pay their debts in less states ($S - h \geq S - i$).

Hence, $u'_E(c_{2s}) > u'_{E'}(c_{2s})$ and $i \geq h \Rightarrow \sum_{s=h}^{S} p_s u'_E(c_{2s}) > \sum_{s=i}^{S} p_s u'_{E'}(c_{2s})$, what is a contradiction. Therefore, if E increases B increases too.

Moreover, if $E \to \infty$ the marginal cost of the debt is zero ($u'_{E'}(c_1) = 0$) since $\min[(1 + r)B, \max(w_{2s} + \delta D - E, 0)] = 0$. Thus, $c_1 \to \infty$ and since $w_1 + D$ are constant $B \to \infty$.

Therefore, an increase in the bankruptcy exemption makes the demand for credit increase.

■

Therefore, there are two distinct forces acting in the proposed problem. If E decreases, the supply of credit is motivated, reducing the interest rate charged to borrowers, since the chances of creditors being repaid are bigger, and they receive more in bankruptcy-states. On the other hand, the demand is repressed since the debtors fear the punishment for losing their goods. With an increase of E there is an incentive to consumers demand credit since they can build assets aligned with their needs. On the other hand, such level of exemption inhibits the lenders' supply of credit since the chance and the amount of repayment fall.

The equilibrium level of credit provided by extreme levels of bankruptcy exemption (0 or unlimited) tends to be very low or even zero. An optimal level of bankruptcy exemption E^{**} may exist where the the equilibrium of supply and demand of credit provide a higher level of credit and welfare in the economy.

The Simulation of the Equilibrium

Through the simulation method we intend to show how the equilibrium values of credit and welfare change as the bankruptcy exemption varies.

To simulate the model we simplify the setup described before. Now, the model has two periods, two states of nature in the second period ($s = H, L$) and two types of agents

(lenders and borrowers). The lenders are risk-neutral and the consumers are risk-averse with logarithm utility function.

The debtors' problem is:

$$\max_{r,B} u(c_1) + Eu(c) = \ln(c_1) + \theta \left[p_L \ln(c_{2L}) + p_H \ln(c_{2H}) \right]$$

st (5), and

$c_1 = w_1 + D + B$

$c_L = w_{2L} + \delta D - \min[(1+r)B, \max(w_{2L} + \delta D - E, 0)]$

$c_H = w_{2H} + \delta D - \min[(1+r)B, \max(w_{2H} + \delta D - E, 0)]$

The model simulation will be done according to the following value of parameters: $w_1 = 0.5, w_{2H} = 1.5, w_{2L} = 0.5, D = 0.3, \delta = 0.9, p_H = p_L = 0.5, \theta = 0.95, \gamma = 0.01$ and $r_f = 1.05$. We can interpret such wage values as the one of a person who is employed receiving 0.5 and expects a promotion for a better job that pays 1.5. The promotion occurs with probability of 0.5. Only the parameter E will be varying.

The simulation results tell us that extremely low and high levels of debtors' punishment provide a small volume of credit negotiated in the economy. The demand for credit is inhibited since the punishment is very harsh when the exemptions are very low (see proposition 3), making the consumers lose a significant share of their goods in bankruptcy states. As the exemption level increases, the amount of credit and welfare rise, reaching its maximal level when the bankruptcy exemption is equal to 0.77. Increasing even more the exemption level,

the welfare and the volume of credit decrease - considering that the supply is inhibited due to the major possibilities of strategic bankruptcy and lower recoveries in bankruptcy states - and the interest rates charged to individuals increases (see proposition 1 and 2). Thus, the volume of equilibrium of the credit B is a non-monotonic function of the bankruptcy exemption levels E, where the optimal level of exemption is intermediary, providing a punishment neither too harsh nor too lenient.

Table A: Simulation Results

E	*B*	*(1+r)*	*E(u)*
0	0.12	1.05	-0.05
0.77	0.31	2.11	0.03
1.5	0.13	>2.11	-0.03
>1.77	0	-	-0.07

Appendix B

Table BI: Bankruptcy and Personal Exemptions, 1992

State	*Homestead*	*Personal Property*	*Federal Exemptions Allowed?*
Alabama	5000*	3000*	no
Alaska	54000	3000	no
Arizona	100000	1650*	no
Arkansas	unlimited	1700	yes
California	75000	2500	no
Colorado	30000*	1000	no
Connecticut	0	1900	yes
Delaware	5000*	500	no
District of Columbia	0	500	yes
Florida	unlimited	1000	no
Georgia	5000*	1400	no
Hawaii	20000*	1000	no
Idaho	50000	1500	no
Illinois	7500*	3200	no
Indiana	7500*	4000*	no
Iowa	unlimited	5100	no
Kansas	unlimited	20000	no
Kentucky	5000	3500	no
Louisiana	15000	0	no
Maine	7500*	1600*	no
Maryland	0	5500	no
Massachusetts	100000	1125	yes
Michigan	3500	1000	yes
Minnesota	unlimited	3000	yes
Mississippi	75000	10000	no
Missouri	8000	1750	no
Montana	40000	1200	no
Nebraska	10000	0	no
Nevada	95000	1500	no
New Hampshire	30000	1000	no
New Jersey	0	0	yes
New Mexico	20000*	4500	yes
New York	10000*	4900	no
North Carolina	10000*	2000	no
North Dakota	80000	1200	no
Ohio	5000	1800	no
Oklahoma	unlimited	3000	no
Oregon	15000	9400	no
Pennsylvania	0	300	yes
Rhode Island	0	0	yes
South Carolina	5,000*	1200	yes
South Dakota	unlimited	4000	no
Tennessee	7500	4000	no
Texas	unlimited	30000*	yes
Utah	8000	1500	no
Vermont	30000*	10600	yes
Virginia	5000*	2000	no
Washington	30000	2600	yes
West Virginia	7500*	2400	no
Wisconsin	40000	2200	yes
Wyoming	10000*	2000	no
Federal	7500*	1600*	

* Allows married couples to double (or increase) the exemption

Table BII: Bankruptcy and Personal Exemptions, changes after 1992

Changes in 1993	State
Homestead Exemptions	Connecticut: from 7,500 to 75,000 (joitn owners may double) New México: from 20,000 to 30,000 Oregon: from 15,000 to 25,000
Personal Property exemptions	Minnessota: from 3,000 to 3,200 Missouri: from 1,750 to 2,250 Oregon: from 9,400 to 9,900
Changes in 1994	State
Homestead Exemptions	All States with feredal exemptions from 7,500 to 15,000
Personla Property exemptions	from 1,600 to 3,200
Changes in 1995	State
Homestead Exemptions	Maine: from 7,500 to 12,500 Vermont: from 30,000 to 75,000
Personal Property exemptions	Maine: from 1,600 to 2,900
Changes in 1996	State
Homestead Exemptions	Minnesota: from unlimited to 200,000
Personal Property exemptions	California: from 2,500 to 4,900
Changes in 1997	State
Homestead Exemptions	Montana: from 40,000 to 60,000 Nebraska: from 10,000 to 12,500 Nevada: from 95,000 to 125,000 Utah: form 8,000 to 10,000 West Virginia: from 7,500 to 15,000
Personal Property exemptions	Nevada: from 1,500 to 4,500 Utah: form 1,500 to 2,500 West Virginia: from 2,400 to 4,000 Wyoming: from 2,000 to 2,400
Changes in 1998	State
Homestead Exemptions	All States with feredal exemptions from 15,000 to 16,150 Alaska: from 54,000 to 62,000 Utah: joint owners may double
Personal Property exemptions	All States with feredal exemptions from 3,200 to 3,450 Alaska: from 3,000 to 3,450 Florida: from 1,000 to 2,000 New Hempshire: from 1,000 to 5,000 Sout Dakota: from 4,000 to 6,000 Washington: from 2,600 to 3,500
Changes in 2000	State
Homestead Exemptions	All States with feredal exemptions from 16,150 to 17,425 Alaska: from 62,000 to 250,000 Louisiana: from 15,000 to 25,000 Rhode Island: from 0 to 100,000 Utah: form 10,000 to 20,000 Washington: from 30,000 to 40,000
Personal Property exemptions	All States with feredal exemptions from 3,450 to 3,700 Alaska: from 3,450 to 11,425 Colorado: from 1,000 to 3,000 Hawaii: from 1,000 to 2,575 Idaho: from 1,500 to 3,800 Minnesota: from 3,400 to 3,600 Montana: from 1,200 to 2,500 New York: from 4,900 to 7,300

Table BII: Bankruptcy and Personal Exemptions, changes after 1992 (*Cont.*)

Changes in 2001	State
Homestead Exemptions	Alaska: from 250,000 to 64,800
	Colorado: from 30,000 to 45,000
	Georgia: from 5,000 to 10,000
	Massachusetts: from 100,000 to 300,000
	Rhode Island: from 100,000 to 150,000
	Utah: form 10,000 to 20,000
	Washington: from 30,000 to 40,000
	West Virginia: from 15,000 to 25,000
Personal Property exemptions	Alaska: from 11,425 to 5,280
	Arizona: from 1,650 to 5,150
	Georgia: from 1,400 to 3,500
	(joint owners may double) plus 600 (wildcard)
	Rhode Island: from 0 to 10,000
	Washington: from 3,500 to 4,500
Changes in 2003	**State**
Homestead Exemptions	All States with feredal exemptions
	from 17,425 to 18,450
	Maine: from 25,000 to 35,000
	Missouri: from 8,000 to 15,000
	Montana: from 60,000 to 100,000
	Nevada: form 125,000 to 200,000
	New Hempshire: from 30,000 to 100,000
Personal Property exemptions	All States with feredal exemptions
	from 3,700 to 3,925
	California: from 4,900 to 5,950
Changes in 2004	**State**
Homestead Exemptions	Alaska: from 64,800 to 67,500
	Arizona: from 100,000 to 150,000
	Maryland: from 5,500 to 11,000
	Massachusetts: from 300,000 to 500,000
	Rhode Island: from 150,000 to 200,000
Personal Property exemptions	Alaska: from 5,280 to 5,500
	Missouri: from 2,250 to 4,250
Changes in 2005	**State**
Homestead Exemptions	Delaware: from 5,0000 to 25,000
	Ilinois: from 7,500 to 15,000
	Nevada: from 200,000 to 350,000
	New York: from 10,000 to 50,000
	(joint owners may not double)
	North Carolina: from 10,000 to 18,500
	(joint owners may not double)
	Oregon: from 33,000 to 39,600
Personal Property exemptions	Ilinois: from 3,200 to 6,400
	Indiana: from 4,000 to 8,000
	North Carolina: from 2,000 to 4,000
	(joint owners may not double)
	Oregon: from 9,600 to 10,050