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THREE ESSAYS ON CONSUMER BANKRUPTCY AND EXEMPTIONS

Richard Mark Hynes

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Supervisor of Dissertation

Graduate Group Chairperson

DEDICATION

This dissertation is dedicated to my wife, Laura Hynes, for her patience in a struggle that was at times more of a burden on her than on me and to my parents; I come back with my shield, not upon it.

ACKNOWLEDGMENTS

I am grateful for the help provided by Jeremy Berkowitz with whom Chapter 3 was written. I am deeply indebted to Professor Eric Posner for the use of exceptional data and even more valuable suggestions. I would also like to acknowledge the advice given to me by my committee, Stephen Morris, Franklin Allen, Nicholas Souleles and Petra Todd. Any remaining errors are, of course, the responsibility of the author.

ABSTRACT

THREE ESSAYS ON CONSUMER BANKRUPTCY AND EXEMPTIONS

Richard Mark Hynes

Stephen Morris

This dissertation examines the economic effects of state and federal laws, commonly known as bankruptcy exemptions, which protect the assets of a debtor who defaults on his debts. Chapter 1 examines these laws in the context of the costly state verification literature. Chapter 2 uses cross-sectional and time series variation in these laws to improve upon a literature which asks: 1) Do larger exemptions lead to higher bankruptcy filing rates? and 2) Do larger exemptions affect the choice of bankruptcy chapter? Chapter 3 uses similar techniques to examine the effect of these laws on the home mortgage credit market. Chapter 1 demonstrates that because many exemptions may be waived through the use of secured credit, large exemptions, by themselves, do not necessarily lead to a sub-optimal contract. Chapter 2 finds that while the use of cross-sectional and time series variation leads to greater support for the proposition that larger exemptions lead to higher filing rates, this result is not as strong as one might expect. Several reasons are given for this result. Among the reasons not cited in the previous literature is the fact that many exemptions protect the assets of a defaulting debtor who does not file for bankruptcy and thus do not necessarily make bankruptcy relatively more attractive. In contrast to previous papers which examine credit generally, Chapter 3 finds that large homestead exemptions do not increase the

probability of denial or the interest rate on home mortgage loans and may, in fact, reduce both of these variables. While personal property exemptions may lead to a higher probability of denial and increased interest rates, this effect does not appear to be economically significant. This conflict with the previous literature most likely stems from the seniority of the mortgage with respect to the home which insulates the mortgage from many of the adverse consequences of exemptions.

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INTRODUCTION

Exemptions, state or federal laws which prevent a creditor from seizing his debtor's property in satisfaction of his claim, present an interesting area of study for six reasons. First, exemptions remain an active area of legislation. For example, the federal bankruptcy exemptions were significantly changed in 1984 and 1994 and the Bankruptcy Review Commission is now proposing major revisions.[1] Second, exemptions vary significantly both across time and across states allowing for empirical research. Third, there were more than one million non-business bankruptcy filings in the year ending September 30, 1996.[2] Although I argue strenuously that exemptions have importance outside of bankruptcy as well, these filings have heightened public awareness (and use) of bankruptcy of which exemptions are an integral part.

Fourth, given the diversity in the exemptions, most commentators would probably agree that some exemptions need reform. However, they would disagree on which exemptions need to be changed. Some argue that the most generous exemptions are excessively large and cite examples of some debtors exempting huge sums while their creditors remain unpaid. Others argue that the exemptions of some states are too meager and tell stories of debtors losing the family farm or stories of creditors leaving a debtor destitute and reliant on social assistance. Both scenarios portray exemptions which have real effects for the average American.

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[1]See Rodney Ho, *Bankruptcy Panel's Ideas Anger Creditors*, Wall Street Journal October 16, 1997 A2.

[2]Administrative Office of the U.S. Courts, REPORTS OF THE PROCEEDINGS OF THE JUDICIAL CONFERENCE OF THE UNITED STATES (1996).

Fifth, many of the claims made by previous researchers were based on an incomplete view of debtor-creditor law. I argue that many of these claims must be tempered when one more carefully considers two elements of the law of exemptions: 1) exemptions help protect a debtor's assets in proceedings other than Chapter 7 and 2) most forms of secured credit are effectively senior to the exemptions. Finally, the results of the empirical literature on property exemptions are in clear conflict and do not support the claims made by either side in the policy debate.

The legal introduction discusses some elements of debtor-creditor law necessary for the reader to understand the arguments made in this dissertation. Chapter 1 examines the impact of the seniority of secured credit by focusing on the homestead exemptions. In particular, Chapter 1 questions the extent to which the debtor can and will use a mortgage to "waive" an exemption in excess of some optimal amount. If this is possible, then one should be less surprised to find that marginal differences in large exemptions have little effect; debtors will simply waive the exemption above some amount. In addition, this may also help explain why credit markets can continue to operate in the face of laws which would seem to encourage high rates of default. It may also help explain why most creditors and debtors do not expend more energy lobbying against very large homestead exemptions.

Chapter 2 reexamines the impact that the exemptions have on the debtor's decision to file for bankruptcy and his choice between Chapter 7 and Chapter 13. It is shown that the predictions that larger exemptions will lead to higher filing rates and that a greater proportion of bankrupt debtors will choose Chapter 7 do not *necessarily*

follow from the premise that debtors maximize their utility or behave "opportunistically." While there are many reasons why one would prefer to test the relationship between the exemptions and the default rate, this data is not currently available. Given additional assumptions one may still believe that large exemptions should increase the number and proportion of Chapter 7 filings. Using longitudinal data, I find moderate support for the proposition that larger exemptions lead to higher filing rates. However, these results are not as robust as might be expected given the widespread belief in this proposition. In addition, the panel analysis adds no support for the idea that larger exemptions lead more bankrupt debtors to choose Chapter 7.

Chapter 3 is derived from a joint paper with Jeremy Berkowitz, an economist at the Federal Reserve Board of Governors. This chapter examines the effects of the exemptions on the market for home mortgage loans. This market is tremendously important in its own right as it typically comprises close to seventy percent of the consumer credit market.[3] In addition, the study of the mortgage market may yield some insight on the effect of exemptions on secured credit in general. The results of Chapter 3 conflict markedly with the findings of Gropp, Scholz and White (1997) which examine the effect of aggregate exemptions on aggregate credit. We find that larger personal property exemptions do indeed lead to increased mortgage interest rates and a higher probability of denial. However, larger homestead exemptions lead to *lower* interest rates and a *reduced* probability of denial.

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[3]See Kennickell, Starr-McCluer and Sunden, *Family Finances in the United States: Recent Evidence from the Survey of Consumer Finances,"* 83 Federal Reserve Bulleting 1 (1997).

THE LAW OF EXEMPTIONS

Several articles and treatises describe the field of debtor-creditor law[4] and exemptions. This introduction is designed merely to provide the elements necessary to understand the fundamental arguments made in later chapters and to emphasize two basic points that have not been properly appreciated in the economics literature on exemptions. First, most exemptions have significant consequences even if the debtor does not file for bankruptcy because they prevent the unsecured creditor from using the exempt property to satisfy his judgment under state law. Second, and more importantly, the most significant forms of secured debt, indeed the most significant forms of all debt, are senior to the exemptions with respect to their collateral and thus may not be directly affected by marginal differences in the exemptions.

I. Source and Variety of Property Exemptions

Exemptions, some of which date back more than 150 years,[5] find their source in state statutes, state constitutions, the federal bankruptcy code and federal non-

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[4]See, for example, CCH, David G. Epstein, DEBTOR-CREDITOR LAW IN A NUTSHELL 4th Ed. (West 1991), Brian Blum, BANKRUPTCY AND DEBTOR/CREDITOR LAW (Little Brown 1993).

[5]The first homestead exemption in the United States was created in Texas in 1839. For a discussion on the origins of property exemptions in the United States, see Joseph W. McKnight, *Protection of the Family Home from Seizure by Creditors: The Sources and Evolution of a Legal Principle*, 86 Southwestern Historical Quarterly 369 (1983) or Paul Goodman, *The Emergence of Homestead Exemption in the United States: Accommodation and Resistance to the Market Revolution, 1840-1880*, Journal of American History, 470-98 (1993). For an early treatise on exemption laws, see Seymour D. Thompson, A TREATISE ON HOMESTEAD AND EXEMPTION LAWS (F.M. Thomas 1878).

bankruptcy statutes.[6] With the exception of the federal non-bankruptcy exemptions, the availability of all exemptions depends in some way on state law. This has resulted in regional variation.

In 1978 Congress attempted to eliminate the variation of exemptions available in bankruptcy by providing for federal bankruptcy exemptions. However, a political compromise resulted in Section 522 which granted a debtor the choice of either the new federal bankruptcy exemptions or those exemptions available under state and federal non-bankruptcy law. Section 522 also granted a state the choice of "opting out" of the federal system and denying its debtors the choice of the federal bankruptcy exemptions.[7] Currently the federal bankruptcy exemptions are only available in fifteen states[8] and in the District of Columbia. Many of the states that have not opted out have adopted exemptions so generous that it is not clear if any of their debtors would choose the federal exemptions for reasons other than administrative convenience.

The substantial state power over exemptions has resulted in significant variation. For example, the current federal bankruptcy homestead exemption has a limit of $15,000[9] while the Texas homestead exemption contains no dollar limit[10] and

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[6]For a complete listing of the exemptions available in each state, see Lawrence P. King, 14 COLLIER ON BANKRUPTCY (Matthew Bender, 15th Ed. 1996). See also Stephen Elias, Albin Renauer and Robin Leonard, HOW TO FILE FOR BANKRUPTCY 5th Ed. (Nolo 1995).

[7]The legislative history of the 1978 Bankruptcy Reform Act and the underlying political climate is described by Eric Posner, *The Political Economy of the Bankruptcy Reform Act of 1978*, forthcoming to U. Michigan Law Review.

[8]The availability of the federal exemptions in Alaska is uncertain. See Elias, Renauer and Leonard, HOW TO FILE.

[9]13 U.S.C. § 522(d).

[10]Texas Property Code Ann. § 41.001.

the Georgia homestead exemption has a limit of $5,000.[11] It should be noted that the fact that a state has "opted out" of the federal bankruptcy exemptions does not imply that its own exemptions will be less generous. Four of the six states with the so-called "unlimited" homestead exemption (Florida, Iowa, Kansas, and Oklahoma) currently deny their debtors the use of the federal bankruptcy exemptions and a fifth, Arkansas, did not allow the use of the federal exemptions until 1991.

Unfortunately, the structure of the exemptions also varies widely requiring strong assumptions to rank by "generosity." While a few states rely heavily on "wildcard" exemptions which allow a debtor to choose the property that he will exempt as long as its market value falls below some dollar limit, the majority of states specify the type of exempt property with great detail. Often the amount that may be exempted is limited by judicial discretion or by adjectives such as "needed" rather than a specific dollar limitation. The personal property exemptions of Utah provide a good example of this. In Utah a debtor may exempt animals, books and musical instruments to $500 total; artwork depicting, or done by, a family member; bed, bedding, carpets, washer and dryer; burial plot; clothing (but not furs or jewelry); food to last three months; furnishings and appliances to $500; health aids needed; heirloom or other sentimental item to $500; and a refrigerator, freezer, stove and sewing machine (Elias 1995).

Many exemptions depend on the characteristics of the debtor either explicitly or practically. A few states, such as Massachusetts, provide an increased homestead

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[11]GA. Code Ann. § 44-13-100(a)(1).

exemption for senior citizens.[12] More significantly, some states allow married debtors to double the state exemptions while others do not,[13] and a few states increase the exemptions for debtors with dependents.[14] Even when there is no explicit condition, the form of some exemptions implies that they are only available to a select group of debtors. It would appear that the exemptions of livestock that still remain in force in several states and provisions that apply only to farming equipment are designed primarily for use by farmers.[15]

Even the homestead exemption varies significantly in more ways than just generosity. As explained above, because each state may treat a specific type of debtor differently (ie married, seniors, etc.), one cannot strictly order the exemptions by generosity. Furthermore, several states include acreage limitations on the homestead exemption. While most states couple this acreage limitation with a dollar limit,[16] a few rely solely on the acreage limitation creating the notorious "unlimited" exemption.[17] Arkansas presents a difficult case in that the dollar limitation depends on the number of

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[12]Massachusetts provides a $100,000 homestead exemption to most debtors and a $200,000 exemption to debtors over 65. MA 188-1, 188-1A.

[13]For example, Massachusetts does not allowed married couples to double the homestead exemption while Nebraska does. Mass Gen. Laws. Ann. Ch. 188 § 1. Neb. Rev. Stat § 40-101. Further complicating matters, some states provide much more generous exemptions for debtors who are the head of a family. Arkansas has a potentially "unlimited" homestead exemption for heads of household while an individual who is single is restricted to $800. Ark. Code. Ann. § 16-66-218.

[14]See, for example, Utah Code Ann. § 78-23-4.

[15]See, for example, Minn. Stat. § 550.37 which provides for a $13,000 exemption in farm machines or an $8,000 exemption in other tools.

[16]See, for example, Mississippi ($75,000 and 160 acres) and Nebraska (2 lots in city, 160 acres elsewhere and $10,000) . Miss. Code Ann. §§ 85-3-1(b), 85-3-21, 85-3-23; Neb. Rev. Stat. §§ 40-101, 40-111, 40-113.

[17]See, for example, Texas Property Code Ann. §§ 41.001, 41.002.

acres. If a married urban debtor's home is on less than 1/4 of an acre, there is no dollar limitation. If the home is between 1/4 and 1 acre, the debtor is restricted to $2,500 in equity under state law. If the debtor owns more than 1 acre, he is restricted to $1,250.[18] Finally, the Section 522(d) homestead exemption and the homestead exemption of a few states contains a spillover provision which allows the debtor to use an unused portion of the homestead exemption as a wildcard exemption.[19] This provision is of obvious importance to those bankrupt debtors who do not own a home.

II. The Importance of Exemptions Outside of Bankruptcy

Much of the previous literature refers to exemptions as bankruptcy exemptions. This is misleading as, with the exception of the § 522(d) exemptions and a few state exemptions,[20] the exemptions protect some of the debtor's property *even if he has not filed for bankruptcy.*[21] To stress this point, it is helpful to imagine a debtor who has decided to stop repaying his debts but who chooses not to file. His creditors would probably contact him and may even contact his employer. These actions are regulated by both state and federal law and if the debtor feels that his creditors are too aggressive, he may decide to sue under common law claims such as defamation, invasion of the right to privacy and the intentional infliction of mental anguish.[22]

The debtor's unsecured creditors, such as his credit card issuer, can only legally

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[18] Ark. Code. Ann. § 16-66-218.
[19]See, for example, Ga. Code Ann. § 44-13-100(a)(1).
[20]Arkansas, California, Delaware, and Maryland have all enacted some exemptions that apply only in bankruptcy.
[21]For a discussion of legal proceedings in which an exemption can be used, see 35 C.J.S. "Exemptions" §§ 122-128.
[22]David G. Epstein, DEBTOR-CREDITOR LAW IN A NUTSHELL 4th Ed. (West 1991).

force repayment by first obtaining a judgment and then either attaching a lien to the debtor's property or garnishing his wages. It is at this stage that exemptions have significance. Most exemptions prevent the creditor from attaching the lien to the debtor's property while a few statutes seem to allow the attachment of the lien but render the lien unenforceable.[23] Regardless, the short-term result is the same: the unsecured creditor cannot seize the debtor's property in satisfaction of his claim. However, if the debtor sells the exempt property, the creditor may be able to attach the proceeds to satisfy his claim.[24]

Most exemptions limit the amount of equity the debtor may hold in the property.[25] If the debtor's interest in the property exceeds the value of the exemption, the creditor can attach and sell the property. However, the debtor is entitled to the proceeds of the sale up to the value of the exemption. Note, however, that the debtor loses possession of the property unless he can reach an agreement with the creditor.

Garnishment is limited by both state and federal law with the more restrictive

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[23]For example, Texas Property Code Ann. § 41.001 only explicitly prohibits the "seizure [of a homestead] for the claims of creditors." This language has resulted in some ambiguity. Some courts have held that no lien can attach the homestead. *Hoffman v. Love*, 494 S.W.2d 591, 593-94 (Tex. Civ. App.-Dallas 1973), *writ ref'd n.r.e. per curiam* 499 S.W.2d (Tex. 1973); *Harms v. Ehlers*, 179 S.W.2d 582, 583 (Tex. Civ. App.-Dallas 1944, writ ref'd). However, other, more recent, cases have found that an unenforceable lien attaches. See *Exocet, Inc. v. Cordes*, 815 S.W.2d 350 (Tex. App.- Austin 1991, no writ.)

[24]Many statutes exempt the proceeds from the sale of the home for a limited period. For example, Hawaii exempts the sales proceeds from a homestead for six months. HI Rev. Stat. § 36-651-96.

[25]A small number of statutes also limit the value of the property itself. For example, the Alaskan motor vehicle exemption allows the debtor to exempt $3,000 in equity in a motor vehicle as long as the market value of the vehicle does not exceed $20,000. Alaska Stat. § 9.38.020(e).

law governing.[26] In some states, such as Pennsylvania and Texas, garnishment is unavailable to general creditors.[27] Of course, if the debtor is not employed, he would have no wages to garnish; most forms of income assistance are exempted either under federal or state law.[28]

A secured creditor, such as the mortgage lender, does not need a court to enter a judgment and attach a lien against the debtor's property as she has already bargained for the right to seize the debtor's collateral if the debtor does not repay the loan. The presence of an exemption will not affect the right of the secured creditor to seize the collateral in satisfaction of her claim; she is effectively senior to the exemption with respect to her collateral. However, a few states and the federal government prohibit the use of some property as collateral for some forms of secured credit. The FTC effectively bans non purchase-money security interests in a consumer's household goods.[29] In addition, most states regulate after-acquired security interests in consumer goods when given as additional collateral.[30] Until, January 1, 1998, Texas prohibited the use of the home as collateral for most second mortgages. Currently mortgages and home equity loans are limited to eighty percent of the value of the home.

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[26]Commerce Clearing House, Inc., CONSUMER CREDIT GUIDE, Vol. 1 at 1793 (1994). Technically this only prevents creditors from forcing the debtor's employer to pay them directly. However, if the creditor were able to get the money from the debtor once he were paid, garnishment would not be necessary; the debtor can probably spend his paycheck faster than his creditors can get a judgment against him.

[27]For a complete compilation of state garnishment law, see Id at 1791-1841.

[28]King, 14 COLLIER ON BANKRUPTCY (cited in Note 6).

[29]16 C.F.R. § 444.2(4) (1997). A purchase money security interest results when a creditor secures his loan by the property that was acquired with the funds provided.

[30]U.C.C. § 9-204(2).

The effectiveness of the use of collateral is limited by restrictions on the ability of the secured creditor to seize the collateral. Even if the secured creditor has the right to seize the property, she must still go through the difficult process of repossession which may result in liability on a theory such as trespass. If she does seize the property, selling the property may be difficult given the rights of other creditors and the debtor. For example, the majority of jurisdictions allow the debtor to "redeem" his real estate even after the foreclosure sale, effectively granting the debtor an option to buy the home at a later date.[31]

If the proceeds of the sale exceed the debt and costs associated with repossession and sale, the secured creditor distributes any remaining value according to the rules of priority. The more important issue, at least from the standpoint of the secured creditor, results when the proceeds are insufficient to repay the debt. Usually a secured creditor has the right to sue the debtor for any deficiency and to recover in the same manner as a general unsecured creditor. However, this right to seek a deficiency judgment is significantly limited by state law and is completely banned in some cases. Most notably California bans deficiency judgments on home mortgages.[32]

It is clear that the presence of collateral is not a panacea as the secured creditor will still face significant legal obstacles in collection and may be undersecured. However, the threat of foreclosure or repossession is credible as the creditor receives significant amounts in a sale.

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[31]Theodore Eisenberg, 9 DEBTOR CREDITOR LAW at 37A-80, 37A.08(D)(1) (Matthew Bender 1997).
[32]Id. at 31-206, 31.12(C)

III. Alternatives Methods of Shielding Assets

Outside of bankruptcy, exemptions present just one method of shielding assets from seizure by creditors. Other significant legal methods of preventing attachment include spendthrift and discretionary trusts, placing one's assets in the name of trusted relatives or friends, and holding property in the form of Tenancy by the Entirety. I argue that the first two methods contain significant limitations relative to the use of exemptions while the third method may operate in effect as an unlimited homestead exemption for married debtors who plan for default.

A debtor can shield his assets from his creditors by granting legal ownership to his children, spouse, or some other relative. There are two significant limitations on this strategy. First, the debtor must trust the relative as the relative will now have the right to dispose of the assets as he sees fit. A more serious limitation is the doctrine of fraudulent conveyances which prevents an *insolvent* debtor from disposing of assets for less than fair value. While this will prove to be a significant limitation for debtors who have been unable to control their spending habits or are faced with an unanticipated bill or judgment, it is not a significant obstacle for those who know they are at risk for judgments such as lawyers and doctors. That is, these debtors (who may have significant contingent liabilities in the form of potential malpractice claims) can shift their assets into the name of family members before they are legally insolvent.

A debtor may also protect his assets through the use of a spendthrift or

discretionary trust.[33] Discretionary trusts, such as support trusts, are trusts in which the trustee has discretion as to how much to distribute to the beneficiary. While this may protect the beneficiary from creditors, a discretionary trust subjects the beneficiary to the judgment of the trustee regarding what is necessary for the beneficiary's support. Although limited in many jurisdictions and prohibited in a few, spendthrift trusts continue to be an acceptable method of limiting the ability of a beneficiary and his creditors to attach the corpus of a trust. Spendthrift trusts have two distinct disadvantages relative to exemptions. First, one cannot create a spendthrift trust for one's own benefit. Courts will invalidate the spendthrift clause presuming that this is merely an attempt to defraud one's creditors. By contrast, the law allows a debtor to purchase exempt property subject only to the limitations of pre-bankruptcy planning. Second, spendthrift clauses prevent the attachment by both involuntary and voluntary creditors. Therefore, the beneficiary of the trust may not use the trust assets as collateral. By contrast, a debtor may use many of the more valuable forms of exempt property, such as the home, as collateral if this will increase his welfare.

Tenancy by the Entirety, which is available in some form in fifteen states and in the District of Columbia,[34] provides a much better substitute for exemptions. Tenancy by the Entirety is a form of ownership in which spouses hold the property jointly.

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[33]For a discussion of these trusts, see George T. Bogart, TRUSTS 6th Ed. (West 1987).

[34]The doctrine of Tenancy by the Entirety is available in bankruptcy in Delaware, Florida, Hawaii, Indiana, Maryland, Massachusetts, Michigan, Minnesota, North Carolina, Ohio, Pennsylvania, Tennessee, Vermont, Virginia, Wyoming and the District of Columbia. See Elias, Renauer and Leonard, HOW TO FILE at 2/17.

Depending on the state, they may hold real and personal property in this form and neither spouse has the right to encumber the property without the consent of the other. Therefore, the creditor of only one spouse has no right to seize this property. This doctrine can act as an "unlimited" exemption against creditors who have not bargained in advance for the right to seize the debtor's property by making both spouses liable. Like the homestead exemption, this doctrine also allows the debtors to voluntarily pledge the home as collateral if it is in their interest to do so. The debtors need only to sign the loan agreement jointly.

IV. Bankruptcy and Property Exemptions

Virtually all consumers who file for bankruptcy do so either under the Chapter 7 "straight bankruptcy" or under the Chapter 13 wage earners plan; the number of non-business filings under Chapter 11 is around one-tenth of one percent of the total non-business filings. While it is true that those debtors choosing Chapter 11 almost by definition have more valuable assets and larger debts, I do not feel that a discussion of this Chapter is warranted.

A. Chapter 7 Straight Bankruptcy

In a Chapter 7 bankruptcy a debtor surrenders all of his non-exempt assets to his creditors in exchange for a discharge of most of his debts.[35] Although the debtor

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[35]Examples of non-dischargeable debts include debts that were not listed, student loans, taxes and credit card debts used to pay the taxes, child support or alimony, fines and penalties, debts related to intoxicated driving, condominium or cooperative association dues, and debts not discharged in a previous bankruptcy due to fraud or misfeasance. In addition, the following debts are not discharged if a creditor objects: 1) debts incurred on the basis of fraudulent acts (including using a credit card when repayment is impossible) 2) debts from willful or malicious injury

need not be insolvent to file, there are some limitations on the access to a general discharge under Chapter 7. First, the debtor may not obtain a discharge if he has received another discharge under Chapter 7 within the last six years.[36] Second, a debtor may be denied a discharge if the court finds that he has "defrauded" his creditors.[37] While not clearly defined, this term generally encompasses concealing money or property, lying about income or debts, or engaging in particularly egregious pre-bankruptcy planning as discussed below.

Finally, a debtor may be denied a general discharge if his filing constitutes a "substantial abuse" of the bankruptcy system.[38] Although "substantial abuse" is not defined in the code, "[t]he primary factor that may indicate substantial abuse is the ability of the debtor to repay the debt out of future *disposable income*."[39] [Emphasis added.] To define disposable income, it is instructive to look to a Chapter 13 filing in which the debtor must repay with all of his "disposable income."[40] Courts define disposable income as income in excess of necessary living expenses. In determining the debtor's necessary living expenses, courts will generally not require large changes to the debtor's standard of living, requiring only that the debtor not retain luxuries

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to another or another's property 3) debts from a breach of a fiduciary duty 4) debts arising from a marital settlement agreement or divorce decree. 13 U.S.C. § 523.

[36]13 U.S.C. § 727. Unfortunately, there is no good centralized record system and it is possible that some debtors file more often by filing in different districts.

[37]13 U.S.C. § 727(a)(2)

[38]13 U.S.C. § 707(b).

[39]King, COLLIER ON BANKRUPTCY § 707.04940 at 707-20 fn4.

[40]13 U.S.C. § 1325(b)(1)(B).

unavailable to the average American.[41] "In short, the court cannot and should not order debtors to alter their lifestyles where there is no obvious indulgence in luxuries."[42]

In those states that have not opted out of the federal exemptions, the debtor is given a choice between the federal bankruptcy exemptions provided by § 522(d) or the state and federal non-bankruptcy exemptions. In those states that have opted out, the debtor must use the state exemptions. The exemptions continue to operate in a fashion similar to their operation outside of bankruptcy. The unsecured creditors still have a right to force a sale of any non-exempt property or any property in which the debtor's equity exceeds the statutory exemption. The secured creditors still have the right to seize their collateral at the termination of the bankruptcy proceeding if their secured claims are not repaid in full and may seize the collateral earlier if given relief from the automatic stay under § 362. Note, however, that the meaning of a secured claim is altered slightly in bankruptcy by § 506, which splits most secured loans into a secured loan equal to the value of the collateral and an unsecured loan as to the rest. This provision is significant as the debtor may redeem the collateral by paying the value of the secured claim, what the court determines is the market value of the collateral. § 506 does not apply to the home mortgage lender.

The bankruptcy petition operates to accelerate all of the debtor's debt. Even if

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[41]King, COLLIER ON BANKRUPTCY § 1325-53 at1325.08[4](b) citing *In re Tinneberg*, 59 B.R. 634 (Bankr. E.D. NY 1986); *In re Hedges*, 68 B.R. 18 (Bankr. E.D. VA. 1986).

[42]King, COLLIER ON BANKRUPTCY at 1325-53

the secured claims are reduced to the current market value of the collateral, many debtors in financial distress will have insufficient assets to redeem their property. The debtor may still retain the collateral if, with the approval of both the court and the creditor, he reaffirms the debt secured by the collateral.[43] The reaffirmed debt survives bankruptcy as if the debtor had never filed. Reaffirmation of secured debt is in fact quite common as the creditor avoids the costs of a foreclosure sale and the debtor is able to retain property such as the home to which he may assign an extra value.[44]

Bankruptcy may enhance the exemptions by avoiding certain liens on exempt property. Consistent with the fresh start policy of Chapter 7, bankruptcy will avoid judicial liens that impair the exemption by reducing the debtor's equity below the permissible amount or by placing a "cloud" on the title.[45] The debtor may also use § 522(f) to avoid non-purchase money secured interests in certain items of personal property such as household furnishings. As discussed above, however, there are significant restrictions on such secured interests independent of the bankruptcy code.

Property held in the form of Tenancy by the Entirety is also exempt in bankruptcy through § 522(b)(2)(B). This property is exempt to the extent that the value of the property exceeds the joint claims on the debtors, much as the debtor returns exempt property to the extent its value exceeds the secured claims against it.[46]

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[43]13 USC § 524

[44]Teresa Sullivan, Elizabeth Warren and J.L. Westbrook, AS WE FORGIVE OUR DEBTORS (1989)

[45]See *In re Henderson*, 18 F3d 1305, 1310-11 (5th Cir. 1994).

[46]*Sumy v. Schlossberg*, 777 F.2d 921, 928 (4th Cir. 1985); *In re Maloney*, 146 B.R.168, 171-72 (Bankr. W.D. Pa. 1992); *In re Sefren*, 41 B.R., 747, 749 (Bankr. D. Md. 1984).

A final note must be said about the effect of a Chapter 7 bankruptcy on the secured creditor. First, the secured creditor may not seize her collateral until she has obtained relief from the automatic stay under § 362. However, a Chapter 7 consumer bankruptcy does not necessarily add significantly to the delay as the entire bankruptcy process can be completed fairly quickly. In fact, "how to" books specifically advise the debtor not to choose Chapter 7 in order to stop foreclosure.[47] Moreover, the doctrine of reaffirmation may make repossession unnecessary as discharge will leave the debtor in better financial condition and thus better able to meet future mortgage payments.[48] Finally, bankruptcy contains better mechanisms for repossessing and selling the collateral that may be worth the extra wait.[49] For example, repossession may now be conducted by the court and the debtor will no longer have the statutory right to redeem his property after it has been sold in a bankruptcy proceeding.[50]

B. **Chapter 13 Wage Earners Plan**

A Chapter 13 bankruptcy is usually presented as the consumer analog of a Chapter 11 reorganization. In Chapter 13 the debtor presents a plan in which he sacrifices all of his disposable income (defined above) to creditors and, in return,

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[47]"At most, [Chapter 7] will only postpone foreclosure for a month or so." Elias, Renauer and Leonard, HOW TO FILE at 6/3.

[48]"About the only way Chapter 7 bankruptcy can help you hang on to your home is by discharging your other debts, so that after bankruptcy you can more easily make your mortgage payments." Id. at 6/3.

[49]For a discussion of the pros and cons of bankruptcy for the secured creditor, see Lynn Lopucki, STRATEGIES FOR CREDITORS IN BANKRUPTCY PROCEEDINGS, 2d Ed. 139-170 (1991).

[50]Id.

receives a broader discharge.[51] In addition to the disposable income test, the debtor must repay his unsecured creditors with an amount that is at least as much as they would have received in a Chapter 7 filing, the "best interests of the creditors" test of § 1325(a)(4).

Chapter 13 also presents the debtor with more powerful tools for addressing his secured creditors. As before, most secured claims are bifurcated into their secured and unsecured components. However, now the debtor need not repay the secured claims in full immediately; he need only propose a plan in which the court determines that the payments to the secured creditors are sufficient for full repayment with an appropriate rate of interest.[52] Again, the mortgage lender receives special treatment as the repayment schedule of the mortgage cannot be altered. The mortgage holder does face some unpleasant consequences from Chapter 13 as the debtor may include arrearage payments in the repayment schedule and the mortgage holder is prevented from immediately repossessing the home.

C. Retroactive Application of Exemptions

While changes in the federal exemptions will apply to debts created before the change, the effective date of state exemptions is less clear as the retroactive application of these exemptions is governed by the Contracts Clause of the United States

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[51]Only six categories of debt are non-dischargeable in Chapter 13: 1) debts to be paid beyond the duration of the plan, 2) child support and alimony, 3) student loans, 4) debts from intoxicated driving, 5) restitution imposed in criminal sentence, and 6) certain debts for necessities not approved by the trustee. 13 U.S.C. §1328. Note, however, the discharge is still subject to the good faith standard of 13 U.S.C. § 1325.

[52]13 U.S.C. §1322(b)(2).

Constitution.[53] Although this provision was included in the Constitution to prohibit states from drafting debtor relief laws,[54] courts since the Great Depression have often upheld some state laws clearly designed to provide debtors relief from contracts entered into before the passage of the statute.[55] The record with respect to exemptions is mixed and depends both on the court deciding the case and the specifics of the statute. Some courts have held that the application of an exemption statute against a pre-existing statute is constitutional[56] while others have ruled it is unconstitutional.[57] Note that the cited cases include some that have apparently been overruled by subsequent cases and were valid law at some point during the period studied in this dissertation.

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[53]U.S. Const. art I, s 10, "No State shall . . . pass any . . . Law impairing the Obligation of Contracts." Note, this provision does not apply to the federal government.

[54]See John E. Nowak and Ronald D. Rotunda, Constitutional Laws §11.8 at 406 (West 1995).

[55]Id. at 411-12.

[56]See, for example, *In re Seltzer*, 104 F.3d 234 (9th Cir. 1996); *Matter of Towns*, 74 B.R. 563 (Bankrtcy. S.D. Iowa 1987) (holding that Iowa's exemption laws are remedial and therefore operate retrospectively); *In re Van Hove*, 78 B.R. 917 (Bankrtcy. N.D. Iowa 1987) (applying increase in exemptions retroactively).

[57]See, for example, *In re LaFortune*, 652 F.2d 842, 848 (9th Cir.1981) (state law permitting homestead exemption without prior filing or recording); *In re Bassin*, 637 F.2d 668, 670 (9th Cir.1980) (state law increasing the homestead exemption from $20,000 to $30,000); *England v. Sanderson*, 236 F.2d 641, 643 (9th Cir.1956) (state law increasing homestead exemption from $7500 to $12,500) *In re Sticha*, 60 B.R. 717 (Bankrtcy. D. Minn. 1987) (holding increase in exemption could not be constitutionally applied to avoid bank's lien which existed before amendment.); *In re Ree*, 114 B.R. 286 (Bankrtcy. N.D. Okl. 1990) (refusing to apply increase in exemptions as bulk of debtor's unsecured debts incurred before enactment of increase). *First Nat. Bank of Mobile v. Norris*, 701 F.2d 902 (C.A. Ala 1983) (holding that applicable exemptions were those in existence at time debts were created.); *In re Bradley*, 19 B.R. 265 (Bankrtcy. Ala 1982);

D. **Pre-Bankruptcy Planning**

No legal issue relating to exemptions has generated more controversy than the ability of the debtor to plan for bankruptcy by increasing his stock of exempt assets. While a debtor may engage in very substantial "planning," there are *some* limits to the debtor's ability to exempt his existing assets and stronger limits on the debtor's ability to accumulate more assets by borrowing on the eve of bankruptcy. Therefore, most debtors will be unable to make ***full*** use of the statutory exemptions. Unfortunately, pre-bankruptcy planning is not limited by express rules. Rather, the ability of the debtor to accumulate exempt assets before filing depends on the court's interpretation of the debtor's "intent." Absent "fraudulent intent," a debtor is generally allowed to freely convert his existing assets into exempt form.[58] However, as discussed below, the extent of pre-bankruptcy planning can be probative of the debtor's "intent."

Collier on Bankruptcy lists eight items as evidence of fraudulent intent: 1) obtaining credit in order to purchase exempt property; 2) converting property after the entry of a large judgment against the debtor; 3) engaging in a sharp pattern of dealing immediately before bankruptcy; 4) converting property of high value or large sums of money into exempt form (the pig to hog analysis);[59] 5) misrepresenting the value of the property; 6) converting an amount that causes insolvency; 7) paying or receiving inadequate consideration for property transferred in connection with the conversion; and 8) transferring property to a person with whom the debtor has a close

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[58]King 14 Collier on Bankruptcy at CasHi-27.

[59]See, for example, *In re Swift*, 916 F.2d 1056, 1060 (1993). "When a pig becomes a hog, it is slaughtered."

relationship.[60]

These factors contemplate an extensive amount of permissible planning. Given this "evidence" of intent, the debtor's ability to convert non-exempt assets into exempt form is only moderately limited. By contrast, however, a debtor who wishes to borrow extensively in order to accumulate more assets faces a significant risk of a denial of a discharge as this is the first factor identifying fraudulent intent.[61] Therefore, many debtors may not have sufficient assets to make full use of the state exemptions as they enter bankruptcy.

V. Conclusion

Exemptions cannot be properly understood unless they are viewed in the context of debtor-creditor law. However, a legal background is not required to understand the issues presented in this dissertation. This overview of debtor-creditor law presented the legal elements necessary to understand the arguments made in the following chapters. In particular, two points will be stressed: 1) exemptions have significant consequences even if the debtor does not file for bankruptcy and 2) the most significant forms of secured debt are senior to the exemptions.

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[60]Id at CasHi-28-CasHi30.

[61]Of course the borrower may try to increase his unsecured debt level slowly. However, this still requires a creditor willing to lend.

CHAPTER 1: SECURED CREDIT AND THE UNLIMITED HOMESTEAD EXEMPTION

Exemptions are part of a legal system which significantly limits the freedom of contract in consumer finance. The potential importance of these exemptions can be demonstrated by the large number of filings, more than one million in 1996, and by the surprising magnitude of the exemptions. Considering only exemptions which allow a debtor to exempt cash or equity in the home, in 1996 married debtors could exempt at least $50,000 in twenty-four states, at least $100,000 in fourteen states and a potentially unlimited amount in six states.

The economic study of exemptions has been almost exclusively limited to empirical studies which have taken advantage of the wide variation in the generosity of exemptions. Exemptions would appear to be vulnerable to the market criticism of government intervention which argues that absent an explicit example of market failure, government intervention can only reduce welfare from the efficient, market solution. Aside from paternalistic arguments,[62] previous studies have identified two sources of market failure that can potentially justify personal property bankruptcy exemptions. However, I argue that both may be inappropriate for the homestead exemption.

Rea (1984) discusses the role of exemptions in insuring the debtor against losses in income. While Rea does not argue that exemptions are unambiguously good,

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[62]Paternalistic arguments are discussed briefly in Section III. In that section I show that the seniority of the homestead exemption potentially undermines these arguments as well as the others.

he does demonstrate that they may play a role in preventing excessive signaling by debtors. Assume that there are two types of debtors, high risk debtors and low risk debtors. Low risk debtors may signal their type by agreeing to contracts that would leave them destitute if they defaulted. Because default is more likely for the high risk debtors, they would not agree to these same contracts. Rea shows that, depending on the difference in risk between high and low risk debtors and the relative size of each population, the government may make a Pareto improvement by banning the signaling. To the extent that the exemptions prevent debtors from agreeing in advance to excessive "arm-breaking," they may raise welfare.

Posner (1995) argues that exemptions, and other laws which interfere with the freedom of contract in consumer credit, may be explained as a means of preventing income assistance circumvention and opportunism. Due to the presence of income assistance, some individuals may use credit to take excessive risks and circumvent society's efforts to insure that they retain a minimum level of welfare in every period. Professor Posner argues that this problem may be reduced by discouraging risky debt contracts through usury laws and prohibiting a debtor from pledging his future income and assets as collateral through exemptions and the fresh start.

While both the over-signaling and income assistance arguments help explain most personal property exemptions, they are inappropriate for a study of homestead exemptions to the extent that the homestead exemption can be waived. The low risk debtor may still effectively "signal" his lower risk and the consumer may shift the risk of his impoverishment onto society by ensuring that he will not have any equity in his

home to exempt. Until the passage of the Bankruptcy Reform Act of 1978, the homestead exemptions could be explicitly waived by a debtor along with other forms of exemptions.[63] The major premise of this paper is that the homestead exemption remains largely waiveable today as the exemptions only allow the debtor to exempt his *equity* in his home.[64] That is, even in bankruptcy the home mortgage is senior to the homestead exemption. Therefore, a debtor may waive the homestead exemption by pledging his home as collateral to his creditors.

The waiveability of the homestead exemption also eviscerates the market criticism. Assume that the debtor and creditor would reach the optimal contract if only left to their own devices. Absent other limitations, the creation of the homestead exemption would have no effect on the contract that they would reach. They could simply secure all of their debt with the home and completely waive the homestead exemption. Once done, they could implement the optimal contract directly.

This argument implies that under full information and costless contracting the homestead exemption, and any other exemption of property that can be used as collateral, is irrelevant. However, in practice not all debt is secured; the exemptions are not completely waived. Therefore, an analysis of the effects of the exemptions is needed. This paper takes a step toward this goal by demonstrating that under idealized assumptions the effect of the exemptions may not be as great as would otherwise

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[63]See King, 4 COLLIER ON BANKRUPTCY § 522.07 at 522-34.

[64]Today the bankruptcy code prohibits the waiver of an exemption. 13 U.S.C. § 522(e). However, a waiver of an exemption in favor of a creditor with an enforceable security interest is not vulnerable under § 522(e). *Dominion Bank v. Nuckolls*, 789 F.2d 408 (4th Cir. 1985).

appear as debtors can "waive" the exemptions with secured credit. In fact, under idealized assumptions the debtor and creditor may simply recreate the optimal contract even if restricted solely to secured and unsecured credit.

The result may help explain a puzzling lack of predictable, robust results in the empirical literature on bankruptcy exemptions. Several authors have tested the proposition that bankruptcy exemptions should make bankruptcy more attractive and thus lead to higher filing rates. While White (1987-88) established a significantly positive relationship between the generosity of a state's exemptions and the bankruptcy filing rate, both Peterson and Aoki (1984) and Shiers and Williamson (1987) find a significantly negative relationship. Gropp, Scholz and White (1997) test the proposition that the exemptions should restrict the supply of credit and expand the demand for credit by changing the likelihood and consequences of default. While they find significant effects consistent with their predictions, Domowitz and Eovaldi (1993) find no significant effects.

The analysis implies that the lack of clear results may be unsurprising if one is measuring differences in the homestead exemptions. If the homestead exemptions are very large relative to the size desired by debtors and their creditors, the debtors will simply waive the excess amount and make the marginal differences irrelevant. Significantly, White *excluded* the homestead exemption when estimating the generosity of a state's exemptions[65] while Shiers and Williamson based their estimation *solely* on

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[65]White, 63 Indiana L J at 42.

the homestead exemption.[66]

The analysis yields only tentative normative implications. Because the federal government designs the bankruptcy system and allows the states to choose the exemptions, it is instructive to examine the optimal choice of an exemption by a state given the existence of the bankruptcy system. The waiveability of the homestead exemption may imply that an unlimited or very large exemption weakly Pareto dominates all other exemptions. However, this depends on several strong assumptions. Two of the strongest assumptions are 1) contracting is costless and 2) debtors are fully informed, assumptions sufficient to find that the exemptions are unnecessary as the market solution would be optimal. It is possible that the same costs of contracting and cognitive failures used to justify the existence of exemptions under a paternalistic analysis would also imply that debtors could not effectively use secured credit to choose their desired exemption. Still, the result may explain why those who advocate larger homestead exemptions do not meet with greater opposition from those who fear a collapse of the credit market.[67]

Section I defines the optimal contract using the costly state verification literature and shows that it is equivalent to a standard debt contract coupled with an exemption in an idealized bankruptcy system. Section II demonstrates that under

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[66]Shiers and Williamson, 21 J Consumer Affairs at 287.

[67]Interestingly, the attempt to impose uniform bankruptcy exemptions in 1978 was characterized as an attempt to substantially raise the level of exemptions and thus met significant opposition. This was possibly true of personal property exemptions. However, at $7,500, the homestead exemption was fairly close to the median homestead exemption in 1978 and would have represented a significant decrease in generosity for those in the states with the "unlimited" exemptions.

strong assumptions the debtor and creditor can use secured and unsecured credit to replicate any pair of debt contract and exemption. Section III relaxes some of the critical assumptions to determine whether the results are robust.

I. Specifying the Optimal Contract

I define the optimal contract with reference to the standard single period costly state verification framework that has been examined by several authors. See, for example, Townsend (1979), Gale and Hellwig (1985), and Welch (1996). This section follows Welch closely but adapts the notation to allow a better examination of key elements of consumer bankruptcy such as the fresh start. The principal notation is reproduced in Appendix I.1.

A. Defining the Problem

Assume a two period world inhabited by a risk neutral bank and a risk adverse consumer whose per period utility is given by U© where c represents the consumer's consumption. Assume that the consumer is able to consume any form of wealth and that U is both strictly concave and twice differentiable. Assume further that $U'(0)=\infty$.

In period one the consumer must obtain funds from the bank to finance his consumption. In period two the consumer will have several sources of income with which he may repay these funds. The consumer will have a home which will have a market value of H with certainty in period two. The consumer will also have monetary income of x in period two where x is distributed f(x). In addition, the consumer will have some stock of human capital, representing future earnings, worth k where k is distributed g(k). Although f(x) and g(k) are common knowledge in period one, only

the consumer can costlessly observe the realized values of x and k in period two. The bank may only observe the realized values of x and k by expending some cost q>0; the bank has sufficient resources to lend to the consumer and verify the realization of the consumer's income.[68] Following the costly state verification literature, the debtor's income does not depend on the effort of the debtor and hence moral hazard is excluded.

I assume that both x and k are freely transferable. Due to laws against slavery, the assumption that human capital is freely transferable is problematic. Consumers may even have difficulty in committing to transferring the proceeds of their human capital as a reaffirmation of one's debts merely shifts the difficulty in collection to a later date. Furthermore, as argued by Rea, the attachment of future earnings creates much the same disincentives as a tax on labor. Still, the main characteristic of the fresh start is that it prohibits the debtor from committing *ex ante* to transfer any of his future earnings in the event of bankruptcy. For comparison I assume that all of the consumer's human capital is voluntarily transferable.

I assume that the consumer is endowed with all of the bargaining power in the relationship but that the bank has an option of storing its wealth and receiving a rate of return of one. For notational simplicity I assume that neither the consumer nor the bank discount future values. In addition, I assume that the consumer and bank cannot enter into contracts that call for stochastic verification.

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[68]Verification is thought to encompass some sort of investigation into the state of the debtor's finances as may occur in a bankruptcy process.

Welch (1996) demonstrates that some of bankruptcy's elements can be partially explained as ways of solving problems created by the bank's inability to commit to verification. I simply assume that the bank is able to fully commit to take any action specified under the contract and to commit not to take any action that is not specified under the contract.

B. **Borrower's Problem**

Since x and k are perfect substitutes and both are freely transferable, I restrict my attention to the realization of the gross income, other than the home, y=x+k where y is distributed j(y). Following the Revelation Principle, I restrict my attention to contracts where the consumer reports the realization of his income, y, to the bank via messages and where the consumer's payoff is structured so that the debtor always weakly prefers to tell the truth. See, for example, Myerson (1979) and Harris and Townsend (1981). Denote the message sent by the consumer as m.

The consumer maximizes the expected value of his utility subject to the constraint that he must wish to comply with the contract (incentive compatibility), the constraint that the contract must be feasible (wealth constraint) and the constraint that the bank must be a willing participant (zero profit condition). He chooses the optimal contract by specifying a transfer function T(.), and verification region, V. The transfer function may depend on the outcome of the consumer's income, y, and the report, m, T(y, m). The verification region, V, is the set of messages for which the bank verifies. Its complement V_C is the set of messages for which the bank does not verify.

The consumer's problem can be written as

$$max U(B) + \int_{y \in Y} U(H+y-T(y)B) dJ(y)$$

such that

IC: $T(y, y) \geq T(y,m)\ \forall y,m \in Vc$. (IC)

$$\int_{y \in Y} T(y,y) B dJ(y) - q \int_{y \in V} dJ(y) \geq B \qquad \text{(zero profit condition)}$$

$T(y,m)B \leq y+H\ \forall y,m \in Y$ (Wealth constraint)

C. The Elements of the Optimal Contract

The elements of the optimal contract are those derived by Gale and Hellwig (1985).

1. *Constant repayment in the absence of verification.* For m in V_c, $T(y,m)=R_B$. If the debtor did not repay a constant amount in the absence of verification the incentive compatibility condition would be violated and he would have an incentive to lie.

2. *Full Insurance if verification occurs and the consumer has told the truth.* When the bank does verify, m in V, then it insures that the consumer will consume a constant amount, ψ. If the consumer has more on hand than ψ, he must pay $H+y-\psi$ to the bank. If verification should not have occurred, the consumer is required to repay the face value BR_B.

3. *Verification occurs iff $H+y<\beta$. Because of risk aversion,*

$(BR_B)^*+\psi>\beta^*>BR_B^*$. If $\beta<(BR_B)^*$ then the contract would call for zero consumption with positive probability which could not be optimal as I assume that $U'(0)=\infty$. If $BR_B+\psi<\beta$ then there is some region in which verification occurs although the consumer could have repaid in full without reducing his consumption. Because verification is costly, this cannot be optimal.

The above result implies that the optimal contract can be rewritten as the solution to the following problem:

$$\max_{B,\beta,\psi,R_B} U(B)+\int_{y=\beta-H}^{y_{max}} U(y-BR_B)j(y)dy+\int_{y=y_{min}}^{\beta-H}\psi j(y)dy$$

s.th.

$$\int_{y=\beta-H}^{y_{max}} BR_B j(y)dy+\int_{y_{min}}^{\beta-H}(H+y-\psi-q)j(y)dy\geq B$$

Unlike Welch (1996), the analysis would not change if the possibility of punishment were included. Punishment can only improve the contract if the consumer's wealth constraint must be binding outside of the verification region; if not the lender could be made better off by calling for an additional dollar of repayment rather than a dollar's "worth" of punishment. In this model I do not assume that the debtor has any income that is non-transferable and the assumption that $U'(0)=\infty$

precludes zero or negative consumption.

II. Replicating the Optimal Contract in an Idealized Bankruptcy System

This section begins the departure from the previous literature. In it I show that the contract formed under an idealized bankruptcy system is equivalent to the optimal contract defined in Section I.

A. Modified Schwartz Theorem

The costly state verification literature implies that the optimal contract is found within those contracts with a constant repayment if no verification occurs and a constant consumption by the consumer if verification does occur. This allows the use of a disarmingly simple application of the Modigliani Miller Theorem performed by Professor Schwartz (1981). The Schwartz Theorem states that under certain assumptions,[69] the ratio of secured to unsecured credit will not affect the amount of interest paid by the debtor. That is, the aggregate interest paid in the absence of default must compensate the creditors for the aggregate loss in the event of default. In the case of a firm, the ratio of secured to unsecured credit should not affect the total distribution in default and therefore should not affect the total distribution in the absence of default.

This paper will modify the Schwartz Theorem to the extent that the consumer's choice of secured credit may affect the following: the aggregate distribution to

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[69]These assumptions are that "creditors (i) can learn and react to the existence of secured credit; (ii) can calculate risks of default reasonably precisely; (iii) are risk-neutral; and (iv) have homogeneous expectations respecting default probabilities." Schwartz, 10 J Legal Stud at 7.

creditors in bankruptcy, the debtor's choice of total borrowing, and the probability of bankruptcy. Assume that the only exemption available in bankruptcy is the homestead exemption and that this exemption allows the debtor to exempt the equity in his home up to an amount ξ_S. Define ξ_E to be the debtor's effective exemption or the amount of property, other than his human capital, that he would actually consume in bankruptcy. Define S to be the amount of credit secured by the home. Define D as all other "unsecured" credit. Denote B as the debtor's total borrowing. Assuming no pre-bankruptcy planning, more on this below, ξ_E= Min[ξ_S,H-S].

Theorem 1: Restated Schwartz Theorem

As long as creditors (i) can learn and react to the presence of secured credit; (ii) know the distribution of the debtor's income, the debtor's total borrowing, and the debtor's preferences;[70] and (iii) are risk neutral, then the required repayment outside of insolvency is solely a function of ξ_E and B. That is, the required repayment is independent of the mixture of S and D as long as S+D=B and Min[H-S, ξ_S]= ξ_E. Therefore, a marginal change in S will affect the aggregate distribution to creditors in bankruptcy and the aggregate interest rate only if H-S<ξ_S.

Proof: See Appendix

B. Replication of the Optimal Contract

Assume that the assumptions underlying the restated Schwartz Theorem and

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[70]This is different from Professor Schwartz's second assumption as I do not take the probability of default as exogenous. This assumption makes Professor Schwartz's fourth assumption redundant as creditors who know the distribution of the consumer's income, the consumer's borrowing and the consumer's preferences will all have the same expectation of default.

the costly state verification framework continue to hold. In addition, assume the following: (iv) courts interpret the verification region "correctly"; (v) debtors can choose any level of secured credit; (vi) a debtor's human capital yields a constant amount, K, and $H+K \geq \psi^* \geq K$; (vii) exemptions are available only in bankruptcy; (viii) pre-bankruptcy planning is prohibited; (ix) the statutory exemption is "sufficiently" large, $K+\xi_s \geq \psi^*$; and (x) the debtor always has sufficient non-exempt assets to meet the verification costs of bankruptcy, $x_{min} > q$. Finally, to make the problem interesting, assume that (xi) the courts will not enforce any attempt by the bank and consumer to create or enlarge an exemption, the parties may only contract with secured and unsecured credit.

Theorem 2: Given the above assumptions, the consumer can and will recreate the optimal contract through his choice of secured and unsecured credit. This leads to two results:

Result 2.1: Marginal differences in the statutory exemption are irrelevant as long as $K+\xi_s \geq \psi^*$.

Result 2.2: The imposition of the bankruptcy system and the unlimited exemptions result in no welfare loss. Because a debtor and his creditors are assumed unable to create exemptions more generous than the statutory exemption, an "unlimited" homestead exemption weakly Pareto dominates all other exemptions and is strictly preferable to exemptions such that $\xi_s < \psi^* - K$.

Proof:

Because there is no uncertainty as to the value of the home and no pre-

bankruptcy planning, $R_s = 1$.[71] Denote the required repayment on unsecured debt as DR_D.

If the consumer does not file for bankruptcy, he does not have access to the exemptions or the fresh start policy and will therefore be forced to repay in full; the secured creditor will receive S and the unsecured creditor will receive DR_D. The consumer consumes $H+K+x-S-DR_D$. If the consumer does file for bankruptcy, the court will verify that his income does indeed fall below the required amount, $H+x+K<\beta^*$. If this is the case, the consumer is entitled to all of his human capital (the fresh start) *and* the minimum of the statutory homestead exemption and whatever equity he actually has in his home, $K+\text{Min}[H-S, \xi_s]$. If ξ_s is arbitrarily large, his total consumption is just K+H-S. Because secured credit is senior to the exemption, the secured creditor will again receive S in bankruptcy. The unsecured creditor will receive the residual from the estate minus the verification cost, x-q.

Assuming the courts provide the "proper" access to bankruptcy, the consumer's problem can therefore be written as:

$$\max_{S,D,R_D} U(S+D) + \int_{x=\beta-H-K}^{x_{max}} U(H+K+x-S-DR_D)f(x)dx + \int_{x=x_{min}}^{\beta-H-K} U(K+H-S)f(x)dx$$

s.th.

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[71]I ignore the possibility of undersecured debt as it can be completely replicated in this model of a constant H and limited pre-bankruptcy planning by fully secured debt and fully unsecured debt.

$$\int_{x=\beta-H-K}^{x_{max}} DR_D f(x)dx + \int_{x_{min}}^{\beta-H-K} (x-q)f(x)dx \geq D$$

Because K is constant, J(y)=F(y-K) for all y. By setting S=K+H-ψ, D=B-S, and making use of the modified Schwartz theorem to show that $DR_D+S=BR_B$ if D+S=B and $\xi_E=\psi-K$, one can rewrite the consumer's problem in the bankruptcy world such that it is identical to the general problem above with the courts providing the term, β*.

Note that I assumed that the debtor would file for bankruptcy when permitted to do so by the court. If the exemption is arbitrarily large, the debtor will wish to file for bankruptcy if $K+H-S>H-S+x+K-DR_D$ or, simply $x<DR_D$ From above note that $S\leq H$, and $(BR_B)^*+\psi>\beta^*$. Therefore, $(BR_B)>\beta^*$ implies $DR_D>x$.

Discussion:

The choice of secured credit has two effects. First, S changes the equity that the debtor will have in bankruptcy and hence the effective exemption. Second, along with D, S determines total borrowing. By simultaneously choosing S and D, the consumer can recreate any choice of B and ξ_E. Because human capital is constant and $K<\psi^*$, the debtor can choose H-S, or ξ_E, such that his total consumption in bankruptcy will be ψ*. By the restated Schwartz Theorem this choice of S and D will result in the same aggregate interest payment as long as ξ_E is constant. Therefore, the consumer, with the help of the courts, is able to replicate any choice of ψ, β, B and R_B that he

could choose above. The costly state verification literature implies that this is sufficient to create the optimal contract from among those restricted to non-stochastic verification.

When one considers the context, this result is unsurprising. The creditors and debtor are still sitting down together to determine the contract. The bankruptcy system discussed imposes some restrictions on the form of this contract. However, these restrictions are immaterial given the above assumptions. The parties are restricted to a constant property exemption in bankruptcy. Because K is constant, this coincides with the debtor's consumption in the optimal contract. Likewise, the constant repayment outside of bankruptcy is identical in form to the constant repayment outside of the verification region in the optimal contract. The only difficult portion of the contract is replicating the optimal verification region. This difficulty is avoided by assuming that courts make the "proper" decisions regarding access to bankruptcy.

III. Relaxing the Assumptions

The importance of the results of Section II can best be understood by relaxing the strong and controversial assumptions. Two of the assumptions are unnecessary for the results. Three more assumptions are only necessary to prove that the unlimited exemption weakly Pareto dominates state contingent exemptions; they are not needed for the irrelevancy result. Finally, I examine the assumptions that are critical to the analysis.

A. Assumptions that Do Not Affect the Irrelevancy or Optimality Results

1. $K<\psi^*$

The value of the debtor's human capital may exceed the optimal consumption for a debtor who defaults on his loan; the "fresh start" may be too generous. However, this changes neither the positive irrelevancy result nor the normative result when viewed from the perspective of the individual state. This is a potential problem with bankruptcy more generally and the fresh start in particular; this is not a problem that can be solved through the state's choice of property exemptions. If $K \geq \psi^*$, the parties can themselves replicate the optimal property exemption, zero, and ensure that the debtor will consume *no more than* K in bankruptcy. They can do so by securing all of the debts by the home so that the consumer must repay all of his debts before he may consume more than K in default.[72]

2. All Creditors Can React to the Presence of Secured Credit

Numerous papers have been written on the impact of non-adjusting creditors on the efficacy of secured credit.[73] These papers start from the same basic point: some unsecured creditors cannot "react" to the presence of secured credit and a debtor may lower his interest payments by borrowing more on a secured basis and less on an

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[72]Because of reaffirmation, this does not mean that the debtor will lose his home in bankruptcy. By reaffirming his debt, the debtor can voluntarily transfer his human capital. That is, bankruptcy prevents the pre-commitment of human capital, not its transferability.

[73]A recent paper on this topic is Bebchuck and Fried (1996). However, this idea dates back at least to the 1970s. Scott (1977). Other permutations on this idea can be found in Hudson (1995) and Drukarczyk (1991).

unsecured basis. Such a bias toward secured credit has been cited as leading to higher transactions costs or "unfairness" as trade and tort creditors are denied recovery.

One might expect that the inability of the unsecured creditors to react will distort the debtor's choice of secured and unsecured credit and impede the use of secured credit to waive the exemption. There is a potential bias, but it stems from a creditor's inability to react to the existence of more borrowing generally. Moreover, if the amount of "additional" borrowing does not affect the probability of filing, then there will be no bias. The additional borrowing will not affect the probability of filing if either the courts are perfect gate-keepers or *all* of the additional borrowing is on a secured basis and the courts enforce *no* limitation on filing.

Theorem 3.1: As long as all credit transactions are *consensual*, the courts provide the perfect limitation on the choice of bankruptcy, and the other idealized assumptions hold, the debtor will choose S and D to replicate the optimal contract whether or not creditors can "react" to the presence of secured credit. Moreover, if the courts provide no limitation on the debtor's decision of whether to file for bankruptcy, the inability of the unsecured creditors to "react" to additional secured credit will cause no distortion.

Proof:

To model the presence of non-reacting, consensual, unsecured creditors, assume that the consumer first makes an offer to borrow money from an unsecured creditor. After the unsecured creditor has accepted or rejected the offer, he then makes an offer to borrow on a fully secured basis from a secured creditor. In equilibrium the unsecured creditor's decision of whether or not to accept the consumer's offer is

independent of the expected choice of secured credit.

Because the statutory exemption is arbitrarily large, ξ_s>H-S, the unsecured creditor will receive no distribution from the home in bankruptcy and thus any marginal change in S over this range will have no effect on his distribution. Therefore, the unsecured creditor will only be concerned with the eventual choice of S if this choice affects the probability that the debtor will file for bankruptcy.

Under the idealized assumptions the court is omniscient. Here I assume that the court will not be swayed by the debtor's total debt, or at least not the debtor's secured debt, and will look only at the realization of the debtor's income. Therefore a distortion may only occur if the access to bankruptcy is not binding and the debtor's desire to file for bankruptcy is changed. As shown above, however, the debtor's incentive to file for bankruptcy is independent of the amount of secured credit he has borrowed. He will wish to file if and only if $x<DR_D$. This result obviously carries over if the court places no limit on access to bankruptcy and again the "non-reacting" unsecured creditors cause no distortion.

It should be noted that a distortion is possible if the courts base the access to bankruptcy on the debtor's total borrowing. Again, however, this is a distortion created by sequential borrowing in general, not by the ability of the debtor to borrow from secured creditors. In fact, if the debtor must borrow only on a secured basis the problem is potentially mitigated as the incentive to file for bankruptcy is not increased.

Discussion

This result follows directly from two points. First, the unsecured creditors

already know the amount of income from the home that they will receive in bankruptcy, nothing.[74] Second, the amount of secured credit does not affect a debtor's willingness to file as it reduces his consumption equally both in and out of bankruptcy.[75]

B. Assumptions Necessary For the Optimality of Unlimited Exemptions Relative to State Contingent Exemptions

1. Human Capital is Constant

The sole benefit of the exemption in this model is that it insures that the debtor's wealth in bankruptcy (the verification region) is sufficiently large and constant. Because of the fresh start, the debtor's wealth in bankruptcy is a function both of the exemption and of the value of his future earnings, his human capital. If the value of the debtor's human capital is uncertain, the parties may only retain a constant consumption in bankruptcy through the use of an exemption that is inversely proportional to the value of the debtor's human capital. Because the debtor may only exempt the equity in

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[74]I assume that the statutory exemption is arbitrarily large so that the debtor exempts H-S in bankruptcy leaving nothing to the unsecured creditors. It is shown below that unsecured creditors, or at least those who face a positive risk of default, will receive nothing in bankruptcy as long as they cannot react to the presence of secured credit and there are no transactions costs associated with secured credit. This follows directly from the premise underlying this criticism of secured credit: a debtor can lower his interest payments by borrowing on a secured basis rather than an unsecured basis. As long as he has unencumbered non-exempt property that can serve as collateral, there is no reason to borrow on an unsecured basis.

[75]This result may appear puzzling given two common questions: 1) why doesn't the debtor borrow a large amount on an unsecured basis and default in period two and 2) why doesn't the debtor borrow and convert the proceeds to exempt assets? The short answer to these questions is that I have assumed both possibilities away. First, the creditors here are *consensual*, meaning that they have a right to refuse the debtor's request for borrowing and thus the debtor cannot borrow an unlimited amount. Second, I have assumed that pre-bankruptcy planning is prohibited and the debtor is unable to carry out his plan of borrowing to accumulate exempt assets.

his home, an asset of fixed value, and because S is assumed to be non-contingent, he may only recreate contracts with a constant property exemption in bankruptcy. Therefore, while the unlimited exemption still weakly Pareto dominates all other constant property exemptions, it is inferior to some state contingent exemptions.

The normative question is whether more should be expected of the bankruptcy system. One can argue that k is not readily observable by the courts. However, current income, x, is observable and x is likely to be highly correlated with k. Some exemption statutes seem to make an attempt at resolving this problem by allowing the debtor to exempt health aids, disability benefits, pensions, or public assistance. Perhaps in response to their limited remaining human capital, some states allow senior citizens to exempt much more than other debtors; for example Massachusetts allows most debtors to exempt up to $100,000 of the equity in their home while those over 65 can exempt $150,000.[76] However, this presumes that the reason behind this differential treatment is that ψ^*-E(k) is larger for senior citizens than for others. While E(k) is obviously smaller, ψ^* may be as well as senior citizens have shorter expected remaining lives. In addition, the state contingent exemptions will only raise welfare if the parties cannot predict the differences in human capital *ex ante*. This does not seem to be the case when comparing senior citizens with other groups.

2. Courts Enforce the "Optimal" Verification Region

Unfortunately, the legal requirements for eligibility for personal bankruptcy are ambiguous. In general, a debtor need not prove insolvency to file for bankruptcy.

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[76]Mass. Gen. Laws Ann. Ch. 188, §§ 1 and 1A.

However, as described in the legal introduction, courts do impose some restrictions on access, particularly in Chapter 7. The provision of the code that has received the most attention is § 707(b) which allows the court to dismiss a Chapter 7 provision if the filing constitutes a "substantial abuse" of the system. Although "substantial abuse" is not defined in the code, "[t]he primary factor that may indicate substantial abuse is the ability of the debtor to repay the debt out of future *disposable income*." (Emphasis added.)[77]

At first glance this provision appears to fit neatly in a world of risk neutrality as the debtor should be denied verification if he "can pay," meaning his income is greater than his debt. (Gale and Hellwig 1985). There are two problems with this interpretation for consumer bankruptcy. First, the optimal contract for a consumer with (strictly) concave utility functions would not require repayment with all or almost all of his income as his marginal utility is extremely high when his consumption is low. Second, perhaps because of this the bankruptcy court has a very different interpretation of ability to pay than the above. Note that the debtor must be able to repay out of his "disposable income". To define disposable income, it is instructive to look to a Chapter 13 filing in which the debtor must repay with all of his disposable income, income in excess of necessary living expenses.[78] In determining the debtor's necessary living expenses, courts will generally not require large changes to the debtor's standard of living, requiring only that the debtor not retain luxuries unavailable to the average

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[77]King, COLLIER ON BANKRUPTCY §707.04(4) at 707-20 fn4.
[78]13 U.S.C. § 1325(b)(1)(B).

American.[79] While this standard is ambiguous enough to make a claim that it represents the optimal contract, this would be a bold assertion.

While the interpretation of substantial abuse poses an interesting legal question, it is not that significant for the purpose of examining the impact of differences in state exemption laws. One still obtains the result that the unlimited exemption weakly Pareto dominates other constant exemptions and the result that marginal differences in exemptions greater than the optimal constant exemption are irrelevant. However, states may be able to increase welfare by providing state contingent exemptions in order to discourage filings when the debtor has a high value of human capital. To illustrate this, I will focus on an extreme case: courts provide *no* check on the debtor's ability to file for bankruptcy, allowing the debtor to file whenever it is in his best interest to do so.

Theorem 3.2

Even if courts make *no* effort to screen bankruptcy filings, the debtor can and will choose S and D such that he replicates the contract that is optimal within the class of contracts that are restricted to a constant exemption in bankruptcy and take the unrestricted access to bankruptcy as given. Again, marginal differences between exemptions above $\psi^{\wedge}$-K are irrelevant where $\psi^{\wedge}$ represents the optimal choice of exemption given no limitation on the access to bankruptcy.

Proof:

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[79]King, COLLIER ON BANKRUPTCY § 1325.08[4](b) at 1325-53 citing *In re Tinneberg*, 59 B.R. 634 (Bankr. E.D. NY 1986); *In re Hedges*, 68 B.R. 18 (Bankrtcy. E.D. VA. 1986).

Assume that there is some cost of bankruptcy that is borne by the consumer, such as a nominal filing fee, so that he will not file for bankruptcy when he repays his creditors in full. A debtor will therefore file if and only if his consumption in bankruptcy is greater than his consumption outside of bankruptcy:

$\psi > K+x+H-B\,R_B$

In a world in which a consumer can specify the consumption in bankruptcy and the repayment in the absence of bankruptcy, his problem is:

$$Max_{\psi,B,R_B} U(B)+F(\psi+BR_B-H-K)U(\psi)+\int_{\psi+BR_B-H-K}^{x_{max}} U(H+x+K-BR_B)f(x)dx$$

s.th.

$$\int_{x_{min}}^{\psi+BR_B-H-K} (H+K+x-\psi-q)f(x)dx+(1-F(\psi+BR_B-H-K))BR_B \geq B$$

Now assume the debtor is presented with a bankruptcy system with no limits on filing and an unlimited exemption but that the debtor may again freely choose S and D. From above, the consumer will file for bankruptcy whenever $x<DR_D$

The consumer's problem can be written as

$$Max_{\psi,S,D,R_D} U(S+D)+F(DR_D)U(\psi)+\int_{DR_D}^{x_{max}} U(H+x+K-S-DR_D)f(x)dx$$

s.th.

$$\int_{x_{min}}^{DR_D} (x-q)f(x)dx+(1-F(DR_D))DR_D \geq D$$

By defining S=K+H-ψ and D=B-S and applying the restated Schwartz Theorem, it can again be shown that the two problems are identical.

Discussion

This result again follows from the fact that the effects of any choice of borrowing, B, and constant exemption, ψ, can be replicated through the use of secured and unsecured credit. Although now the choice of ψ and B affect the probability of default, it is irrelevant whether one chooses these values directly or as a combination of D and S.

Note that the debtor replicated the contract that is optimal from among a fairly restrictive set. That is, even if courts refused to act as gate-keepers, the parties could potentially improve upon the contract by specifying lower exemptions outside the "optimal" verification region to discourage the debtor from filing. However, it is unclear if such an effort would be worth the additional contracting costs or that a court unable to determine whether the debtor "should" file would be able to enforce these provisions. One may view exemptions of public assistance or some of the few exemptions that are increased for the disabled or ill as attempts at addressing this problem. However, these are not the most significant or controversial aspects of the

exemption system. Moreover, these exemptions would seem to be clearly motivated by Professor Posner's income assistance analysis.

3. Exemptions Are Available Only in Bankruptcy

The vast majority of state property exemptions, and virtually all of the state homestead exemptions, protect a debtor whether or not he has filed.[80] Again, this does not upset the irrelevancy result or the result that the unlimited homestead exemption weakly Pareto dominates all other constant property exemptions. However, the costly state verification literature suggests that exemptions should only be available if the court verifies that the debtor indeed cannot repay. Given that the states may restrict the exemptions to debtors in bankruptcy,[81] it is unclear why more have not done so.

The availability of the exemptions and related laws which restrict the garnishment of a debtor's wages cast doubt on the assumption that a court will enforce full repayment in the absence of a filing. This calls into question the efficacy of using the costly state verification literature to examine consumer credit and hence the

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[80]Arkansas has a homestead exemption that applies only in bankruptcy of $800 for a single individual and $1,250 for a married couple. Ark Code Ann § 16-66-218. However, Arkansas has an alternative homestead exemption for a head of a family that is restricted only by acreage. This exemption is not restricted to bankruptcy. Id. Likewise, California has two sets of exemptions, one of which only applies in bankruptcy. However, the homestead exemption is much more generous in the exemption scheme that applies whether or not the debtor has filed. Compare Cal. Civil Procedure Code § 704 with § 703.

[81]States may restrict the exemptions to debtors in bankruptcy through one of two methods. First, they may adopt exemptions that explicitly only apply in bankruptcy as is the case with some of the exemptions in Arkansas, California, Delaware and Maryland. Alternatively, they may allow their debtors to choose the § 522(d) exemptions in bankruptcy and provide minimal other exemptions. This strategy has been followed by Rhode Island, among others.

normative results.

Previous papers using the costly state verification literature to examine consumer credit provide no guidance on how to resolve this issue. One can attempt to save the analysis by arguing that the ability of a debtor to avoid repayment without filing for bankruptcy is overstated. Creditors can usually garnish the debtor's wages to some extent and may employ other forms of pressure. Furthermore, if a debtor sells his exempt property, creditors can reach the proceeds of the sale after some time.[82] Still, default in the absence of bankruptcy is clearly important as historically over half of all discharged consumer loans did not result from bankruptcy.[83]

C. Assumptions Central to the Analysis

1. Creditors Can Refuse to Grant Credit

One commonly cited type of creditor who was not given the chance to refuse credit is the judgment creditor, a creditor who has convinced a court that she was the victim of a tort such as malpractice. These creditors can be thought of as having been forced to lend to the debtor. The consequences of exemptions on these creditors are obvious: the exemptions operate as a transfer of wealth from tort victims to tortfeasors. Even if juries increased the awards as compensation, an assertion that seems unlikely, this will not necessarily offset this effect as the debtor may still exempt

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[82]Some homestead exemptions exempt the proceeds from the sale of the home for a limited period. See, for example, Ariz. Rev. Stat. Ann. § 33-1101.

[83]For example, in 1992 bankruptcies represented only one-third of consumer credit losses. Installment Credit Report (1992) pg. 74. This may understate the true importance of bankruptcy. The charge-offs outside of bankruptcy represent debtors who have not paid for 180 days and therefore may include those who subsequently file for bankruptcy.

the same amount, ξ_E. To the extent that the tort system acts to discourage inefficient behavior, the exemptions will therefore have real welfare costs.

The fact that Sullivan, Warren, and Westbrook (1989) found that judgment creditors make up a very small fraction of the claims in bankruptcy should give one pause before deciding that the existence of tort creditors presents a significant issue. However, their findings do not necessarily mean that these creditors are not significant when examining marginal differences between property exemptions. First, these exemptions typically operate both in and out of bankruptcy protecting debtors who do not file. Indeed, for debtors found liable for willful conduct the exemptions may only have real significance outside of Chapter 7 as a Chapter 7 filing would not result in a discharge.[84] Second, judgment creditors may be particularly important for those few wealthy debtors, such as professionals subject to malpractice liability, with sufficient unencumbered assets to make marginal differences in large exemptions meaningful. Finally, the existence may play a significant role in settlement negotiations by limiting the possible recovery. In fact, settlement may explain why so few judgment creditors are found in bankruptcy. If the value of the underlying claim is clear and the tortfeasor does not have a significant number of other significant unsecured creditors, then neither uncertainty nor a collective action problem prevent a settlement that would avoid the substantial costs of bankruptcy.

2. No Restrictions on the Use of Secured Credit

The ability of the debtor to freely use his home as collateral for a loan is the

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[84] 13 U.S.C. § 523(a)(6).

fundamental assumption of this analysis. Until recently, Texas banned home equity lending and thus clearly contradicted this assumption. However, in November of 1997 Texans amended their constitution, and since January 1st, 1998, home equity lending up to eighty percent of the value of the home is permitted.

The analysis also assumes that secured credit is effective at guaranteeing repayment if the collateral is sufficiently valuable. Unfortunately, this is not always the case. For example, following the change in law in Texas, creditors must sue in order to foreclose, a process which may be very time-consuming. Given the high rate of repayment on home mortgage loans relative to unsecured credit, see Chapter 3, it is likely that secured credit does have significant advantages. That being said, it should be noted that the claim made in Chapter 3 that home mortgage lenders may prefer large homestead exemptions relies on the idea that the costs of repossession and foreclosure are likely to be substantial.

3. Pre-Bankruptcy Planning is Sufficiently Limited

As explained in the legal introduction, there are legal and practical limits on pre-bankruptcy planning. These limits can be roughly divided into two categories: 1) limits that prevent further borrowing to accumulate assets to exempt and 2) limits that prevent a debtor from converting his existing assets into exempt form. While the former appear to be moderately effective, there is some question over the effectiveness of the latter. Assume a debtor can convert z of his liquid assets into exempt form by paying down the mortgage but only if he has the liquid assets on hand. That is, he can pay down the mortgage by Min[x, z].

If $z \leq x_{min}$, the above analysis is substantially unchanged; the debtor would set $S=K+H+z-\psi^*$.[85] Even if the debtor will sometimes have fewer liquid assets on hand than the court would allow him to convert into exempt form, $x_{min}<z$, this does not necessarily imply that the effective exemption will be too large. That is, as long as the exemption is restricted to an asset, such as the home,[86] that is in place at the time the debtor makes his borrowing decisions, the debtor and creditor can still reach any *maximum* effective property exemption that they desire. To see this, note that the creditors could simply secure *all* of the debt by the home so that the debtor could only exempt his home if he repaid all of his creditors in full. Thus, the strong form of the counter to the market critique still holds. If the homestead exemption is truly not needed, creditors and debtors could still waive the exemption through the use of mortgages.

The lack of a limit on pre-bankruptcy planning may result in a significant welfare loss as the debtor and creditor are unable to use the debt contract to insure the debtor in the verification region. If the legal limit on pre-bankruptcy planning is not always binding, the debtor's effective exemption (assuming it is non-zero) will depend

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[85]Note that this may require an amount of secured credit that exceeds the value of the collateral. This should not create a problem either legally or practically as long as it is clear that the debtor will pay down the mortgages in order to exempt the equity in the home.

[86]There are a few cases of debtors purchasing homes on the eve of bankruptcy. However, such a scenario is unlikely as few debtors in financial distress may obtain financing. One exception may be tortfeasors. However, courts may interpret the purchase of a home on the eve of bankruptcy as fraudulent and deny a discharge or even the exemption. See, for example, *In re Coplan*, 156 B.R. 88 (Bankr. M.D. Fla. 1993).

on his monetary income before bankruptcy, ξ_E= H-S+x. This reduces the insurance value of the debt contract as the effective exemption is not constant. If, as is likely, the debtor's monetary income on the eve of bankruptcy is positively correlated with the value of his human capital, the insurance value of the exemption is further reduced. If the courts place no limit on when the debtor can file for bankruptcy *and* place no limit on the debtor's ability to engage in pre-bankruptcy planning, this result is made even worse. In this case the consumer will file for bankruptcy whenever he has borrowed on an unsecured basis, D R_D>0. Bankruptcy may only be prevented by borrowing solely on a secured basis. Essentially, the debtor has *no* property exemptions. Note that R_S>1 if S>H+x_{min} as the secured debt may be undersecured for some realizations of his monetary income, x.

Here a finite choice of ξ_S can raise welfare by effectively limiting pre-bankruptcy planning and allowing the use of the debt contract for a limited insurance policy. This discussion implies a purely negative role for pre-bankruptcy planning. Such a conclusion should perhaps be postponed pending a multi-period framework in which a potential trade-off between the debtor's decision to consume or to save can be more completely studied.[87] Put simply, pre-bankruptcy planning may help prevent the debtor from consuming all of his assets before filing for bankruptcy in order to get at least a small benefit from wealth that would otherwise go to his creditors. Moreover, because

[87]This paper focuses on the one period problem due to the uncertainty as to the optimal structure of the contract in a dynamic framework. Although Chang (1990) and Webb (1992) study the optimal contract in a multi-period framework with risk neutral agents, I know of no paper that studies the more general case of concave utility.

x in this period was part of k last period, and hence exempt by the fresh start, pre-bankruptcy planning may play a role in inducing a debtor to delay filing.

4. Creditors Know the Debtor's Debt, Preferences and Income Distribution

The above results were premised on the idea that the debtor and creditor would arrive at the optimal contract if they were only given the chance. However, as discussed above, Rea and Posner present arguments which show that the market solution may not in fact be the optimal solution. To the extent that these arguments are correct, pre-bankruptcy planning and limitations on the use of the home as collateral may be justified as a means of making the homestead exemption non-waiveable.

5. ξ_S is Sufficiently Large

Assume that $\xi_S<\xi_E^*$. If the debtor's preferences in ξ_E are single peaked, he will set $\xi_E=\xi_S$. Given the assumptions under which the restated Schwartz Theorem holds, the choice of S is irrelevant as long as $H-S>\xi_S$. Therefore, one can only assert that $S\leq H-\xi_E$. However, if some creditors cannot react to the presence of secured credit, then, by Theorem 3.3 (below), the consumer will always set $S=H-\xi_S$ Therefore, as ξ_S increases, the quantity of secured credit should *fall* as the parties seek to utilize the larger exemptions. Once $\xi_S=\xi_E^*$, any further increase in ξ_S should have no effect.

Theorem 3.3

Assume $\xi_S<\xi_E^*$ and unsecured creditors do not observe the choice of secured credit at the time of lending. There are two possibilities depending on the debtor's preferences and his stock of housing. In case one the debtor's demand for current borrowing is small relative to the value of his riskless asset in excess of the exemption

and there is no risk of default. In case two, when there is a possibility of default, the debtor borrows $S=H-\xi_s$ and borrows the rest on a purely unsecured basis.

Proof:

An unsecured creditor would only receive a positive distribution in bankruptcy if the debtor is unable to reduce his interest payments by substituting to secured credit. Because he can borrow at an interest rate of one from secured creditors he must borrow at an interest rate of one from the unsecured creditors as well; they must also lend without risk. This could occur only if $x_{min}+H-\xi_s > S+DR_D=B$. This is possible if the debtor has a large amount of non-exempt property and a low demand for borrowing. However, it results in the uninteresting case of no default as the debtor has sufficient non-exempt property to repay his creditors with certainty.

If there is a positive risk of default, the debtor wants to borrow against his uncertain income, then the unsecured creditors must charge an interest rate greater than one. As the debtor may borrow at a lower rate from the secured creditor, he would only borrow from the unsecured creditor if borrowing further on a secured basis will reduce his consumption in bankruptcy, $H-\xi_s \leq S$. If $\xi_s \leq \xi^*$ and preferences for effective exemptions are single peaked, he will not wish to set $S>H-\xi_s$ as this will reduce consumption in bankruptcy. Therefore $S=H-\xi_s$.

6. Debtors Are Aware of ξ_s and Contracting is Costless

Economists are (perhaps rightly) criticized for relying too heavily on the

assumptions of rational agents and full information.[88] By assuming certain types of contracting costs or information failure, one can justify various forms of policy intervention. In fact, one is tempted to interpret the "irrelevancy" result as an argument in favor of exemptions in general and large exemptions in particular.

The use of a mortgage to determine the desired exemption may be cheaper than contracting for the exemption directly. Moreover, the requirement that the debtor sign a mortgage agreement to put his home at risk may provide the same deliberative value as a mandatory waiting period in other contexts. However, these conclusions are premature absent a model that includes the costs of contracting and examples of cognitive failure. These same difficulties may prevent the debtor and creditor from using the mortgage to set the desired exemption level. In fact, the ability of the debtor to borrow using secured credit may defeat the paternalistic role of the exemptions as well.

A full discussion of possible transactions costs and the cognitive failure of consumers is beyond the scope of this paper. However, three examples will illustrate that the impact of the exemptions will depend critically on the assumptions made.

First, assume that contracting is costless and that the debtor assumes that $\xi_s=\infty$. That is, the debtor assumes that he must sign a mortgage in order for foreclosure to occur. If all of the other assumptions will hold he will set $H\text{-}S=\xi_E^*$ and the optimal results again hold. Now assume that the debtor assumes that $\xi_s=0$, that he will lose his

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[88]See, for example, Sullivan, Warren and Westbrook (1989) criticizing the "Simple Hypothesis" and arguing that exemptions may play a productive role in the credit market.

home if he does not repay. If the unsecured creditors cannot "react" to the presence of secured credit and cannot inform the debtor of his mistake, the debtor will set S=H before borrowing on an unsecured basis as the interest rate on the secured loan is lower. Exemptions therefore will serve no purpose as the debtor will have no equity to exempt. Finally, assume that debtors know the statutory exemption but underestimate the probability of a fall in income. In fact, assume that the debtors think that their future income is constant, x=X and k=K. In this case they will set S=H before borrowing on an unsecured basis because they may achieve a lower interest rate through secured credit and they consider default impossible. Again, the exemptions serve no purpose.

IV. Conclusion

Homestead exemptions, an element of American debtor creditor law for over one hundred fifty years, remain a puzzle. I argue that a debtor may, to some extent, waive these exemption through the use of a mortgage and a home equity loan, implying that both the standard criticism of government intervention and the standard justifications of exemptions do not readily apply to the homestead exemption.

This ability to "waive" the homestead exemption may also help explain why the empirical literature failed to find robust results when looking at marginal differences in the exemptions. Simply put, if debtors choose to have equity in their home that is less than the homestead exemption, a marginal increase in the exemption should have no effect.

The seniority of the mortgage and home equity loan does have some tentative

normative implications. If a state takes the federal bankruptcy system as given, adopting an unlimited or extremely generous homestead exemption may not be a puzzling strategy as such an exemption is weakly Pareto dominant under the idealized assumptions. However, this result does not survive the relaxation of some of the critical assumptions. In particular this result is weakened by the toleration of significant pre-bankruptcy planning and by the existence of judgment creditors. More realistically, the ability to issue a mortgage that is senior to the homestead exemption may help explain why those arguing for large homestead exemptions do not meet with more serious opposition.

The deeper question of why homestead exemptions exist is not answered in this dissertation. This chapter merely shows that under some idealized assumptions a debtor and creditor may replicate the optimal contract using only secured and unsecured credit. Perhaps the exemptions exist because contracting with secured and unsecured credit is cheaper than in the more general case. Perhaps the exemptions exist to force a debtor to deliberate before putting his home at risk. However, these conclusions cannot be made with confidence unless one also makes explicit assumptions about the costs of contracting or the cognitive failure of consumers. Depending on the assumptions made, these criticisms may imply that a system of large exemptions is undesirable as the debtor and creditor are no longer able to waive exemptions that are in excess of their optimal exemption.

CHAPTER 2: EXEMPTIONS AND THE FILING DECISION

Some statistics on personal bankruptcy reveal why the topic has become a frequent feature in the news. Bankruptcy filings are high and rising. In the year ending September 30, 1996 there were 1,058,444 non-business bankruptcy filings nationally, more than five times greater than the number in 1978.[89] These filings represent large and growing losses for creditors. Professor Michelle White estimates that personal bankruptcies cost creditors up to fifteen billion dollars in 1982 when there were "only" 452,000 filings. (White 1987-88). While Professor White's estimate may overstate the actual amount,[90] the increasing attention to bankruptcy paid by banks implies that the

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[89]Administrative Office of the U.S. Courts, REPORTS OF THE PROCEEDINGS OF THE JUDICIAL CONFERENCE OF THE UNITED STATES (1978-96).

[90]Professor White's estimate is based on a sample of bankruptcies obtained from the Administrative Office of the U.S. Courts. She reports that secured creditors received only 0.8% of the value of their claims. Id at 38. This is inconsistent with the importance of mortgages in bankruptcy and the high repayment rate on mortgages. In 1981, the year studied by Professor White, over half of all debtors in bankruptcy owned homes. See Teresa A. Sullivan, Elizabeth Warren and Jay Lawrence Westbrook, AS WE FORGIVE OUR DEBTORS, 129 (Oxford, 1989). Of these debtors, the mortgage was their most significant debt. Using the median values presented by Sullivan et al, the home mortgage represented almost 2/3 of the debt of the "typical" homeowner in bankruptcy. Id. at 132. Given the number of bankruptcies, the presence of mortgages held by bankrupt debtors and the claimed low repayment for secured loans, one might expect very high charge-off rates for home loans. However, charge-off rates on home loans are under two tenths of one percent. (*Installment Credit Report* (1992)). It is my suspicion that the data set used by Professor White treated loans that were reaffirmed as simply not repaid. This is consistent with Professor White's finding that if there was *any* repayment, the secured creditor received 65% of his claim. White, 63 Indiana L J at 39. This probably reflects distributions to undersecured claimants in satisfaction of their claim such as the holders of secured interests in household goods and automobiles. As many home loans are reaffirmed, ignoring the value of reaffirmation would significantly understate the return to the home mortgage lender. Sullivan, Warren and Westbrook, AS WE FORGIVE at 134-35. In fact, Professor White's estimate of a 0.8% repayment rate may prove that the vast majority of home mortgages are

true amount is significant.

These high filing rates mask substantial regional variation. In fiscal year 1996 the bankruptcy filing rate in Tennessee was more than five times higher than the rate in Alaska and more than three times the national average. There is also substantial variation in the choice of Chapter for those debtors who do file. For example, in Georgia more than two-thirds of bankruptcies in 1996 were Chapter 13 bankruptcies. By contrast, less than 5% of bankrupt debtors in North Dakota chose Chapter 13 in 1996. This is significant as it is thought that creditors receive substantially more in Chapter 13 than in Chapter 7.

Although the federal government generally determines bankruptcy law, a political compromise has resulted in substantial regional variation in the exemptions available to bankrupt debtors (Posner 1997). Texas is seen as one of the most "generous" states. Among other exemptions, a head of household in Texas is entitled to retain an "unlimited" value in their home and up to $60,000 in a laundry list of other items.[91] By contrast a debtor in Maryland may only exempt his car and home if he may do so with his $5,500 wildcard exemption.[92]

Previous scholars noted the above facts and asked whether generous exemptions lead to higher filing rates and a higher proportion of bankrupt debtors

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reaffirmed in bankruptcy.

[91]Tex. Prop. § 42.001

[92]MD Courts and Judicial Proceedings § 11-504(b)(5), (f). As explained in the legal introduction, however, married debtors in Maryland may be able to shield property held in the form of Tenancy by the Entirety from the creditors of only one spouse. This doctrine is given effect in bankruptcy through 13 U.S.C. §522.

choosing Chapter 7 by making a Chapter 7 filing particularly attractive. Sullivan and Worden (1990) did find that homestead exemptions smaller than the federal exemptions are generally associated with a greater proportion of debtors choosing Chapter 13. The relationship between the exemptions and the filing rate has been more heavily tested and has yielded conflicting results.[93] Although White (1991) characterizes her results as establishing a strong, positive link between the generosity of a state's exemptions and the filing rate, at least two other studies have found either no significant relationship or even a negative relationship. (See Peterson and Aoki 1984 and Shiers and Williamson 1987). This "failure" has lead some sociologists and legal academics to refer to this hypothesis derisively as the "Simple Hypothesis." (Sullivan, Warren and Westbrook 1989).

Despite this "failure," concluding that the economic model of bankruptcy is incorrect would be premature for two reasons: 1) a finding that larger exemptions do not lead to a higher filing rate is still consistent with an economic model of bankruptcy and 2) even if the exemptions do lead to more filings, there are several empirical explanations for why such an effect may not be discernible in the date previously used. Section I addresses the first reason and presents four possible theories for why the Simple Hypothesis does not necessarily follow from the premise that individuals respond to incentives created by the legal system. In fact, I argue that focusing on the relationship between the filing decision and the exemptions is too narrow. The more

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[93]For an early work on this topic, see Apilado, Dauten and Smith (1978). Because this work used data from before the Bankruptcy Reform Act of 1978, it is not discussed extensively in this chapter.

important, and more theoretically grounded, question is whether the exemptions have an impact on the default rate. Section II discusses additional empirical difficulties which may shield any link between the exemptions and either the bankruptcy rate or default rate.

Sections III through V attempt to control for the identified difficulties and determine if a link between the filing rate or default rate and the generosity of exemptions can in fact be found. This Chapter has two distinct empirical advantages over the previous literature. First I make use of data from multiple years allowing for the use of longitudinal techniques. Second, I employ a more thorough examination of the generosity of state exemptions.

As a point of departure, Section III replicates the previous cross-sectional analysis. Section IV makes use of all changes in exemptions in conducting a longitudinal analysis. Section V uses the change in the federal exemptions in 1994 as a quasi-experiment.

This paper finds that the longitudinal and quasi-experiment results provide better support for the Simple Hypothesis than do the cross-sectional results. However, these results are not as conclusive as one would like. The longitudinal and quasi-experiment results do not lend additional support to the proposition that larger exemptions lead more bankrupt debtors to choose Chapter 7.

The policy implications of my results should not be overstated. This paper merely asks if the exemptions have an effect, not whether they are larger or smaller than some optimal amount. If the exemptions do have an effect, policy makers must

still decide whether or not it is beneficial. If there is indeed a lack of an effect, this should represent a puzzle both for those who favor large exemptions as well as those who oppose them.

I. Do Generous Exemptions Lead to Higher Default and Bankruptcy Rates, and a Greater Fraction of Bankrupt Debtors in Chapter 7?

The premise that larger exemptions induce more debtors to file for bankruptcy in general and file under Chapter 7 in particular is almost taken as self-evident by previous researchers. The logic is simple: exemptions reduce the amount that the debtor must repay in bankruptcy and therefore should lead more debtors to file. Shiers and Williamson (1987) noted that this logic may erroneously take the debtors' debt obligations as given. I identify four additional theoretical problems: B) marginal differences in large exemptions are irrelevant to those debtors with a small amount of assets; C) the exemptions have legal and economic significance outside of Chapter 7; D) anti-abuse provisions may prevent those debtors affected by the large exemptions from filing; and E) the logic may not survive in a multi-period framework. While one may still suspect that larger exemptions should lead to higher bankruptcy rates, these arguments imply that such a prediction depends on additional, more tenuous assumptions. In addition, these arguments imply that one should prefer to examine the relationship between the default rate and the exemptions rather than the filing rate and the exemptions.

A. Exemptions May Alter the Credit Market and Collections Efforts

In discussing why they found that larger property exemptions are associated

with lower filing rates, Shiers and Williamson suggest that this may in part be due to the reaction of the creditors; creditors in jurisdictions with large exemptions will be more careful in their lending and will take other, unspecified, precautions to reduce bad debt losses.[94] Because I have no data on the lending criteria of creditors or even the total amount borrowed by state, I cannot control for this bias. Given a recent paper by Gropp, Scholz and White, I cannot even predict the sign of this bias with certainty.

Using the 1983 Survey of Consumer Finance, Gropp, Scholz and White do find that larger exemptions reduce access to credit for some debtors, particularly low asset debtors.[95] However, they also find that the larger exemptions result in an increased demand for credit and, on net, may actually increase borrowing for some debtors.[96] Therefore, if the bias stems from the effect on total borrowing, its sign is uncertain.

A related source of bias is suggested by White and Petropolous (1996). They suggest that the number of bankruptcy filings may understate the true effects of the exemptions as larger exemptions and more generous bankruptcy laws may reduce the incentive of banks to pursue delinquent debtors thus making bankruptcy unnecessary. This provides yet another reason for why it would be preferable to test the effect of the

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[94]Shiers and Williamson, 21 J Consumer Affairs at 289.

[95]Gropp, Scholz and White, 112 Quarterly J of Econ at 234. One puzzle raised by this work is why they found strong results when they focused on low asset debtors and very large exemptions. For example, Gropp et al found that the availability of credit to debtors with gross assets of less than $8,000 was significantly affected by the presence of unlimited exemptions rather than exemptions totaling between $25,000 and $70,000. Even with substantial pre-bankruptcy planning, it is unlikely that a debtor would be able to amass almost nine times his current assets so that the statutory exemptions are binding.

[96]Id. at 240.

exemptions on the default rate.

B. A Debtor May Only Exempt the Property That He Has

In a world of truly unlimited pre-bankruptcy or default planning a debtor will accumulate property until he reaches the statutory limits, if the limits exist. To the extent that this "planning" is limited, many debtors will lack sufficient assets to make full use of the exemptions. If this is the case, these debtors may be indifferent to marginal differences in exemptions that are greater than the value of the assets they may actually gather before filing. Focusing on aggregate filing statistics will understate the true importance of the exemptions if the current exemptions are so large as to make marginal differences irrelevant to a large fraction of the population.

Debtors undoubtedly plan for bankruptcy both by converting non-exempt assets into exempt form and by borrowing on an unsecured basis in order to repay secured loans such as the home mortgage. As described in the legal introduction to this dissertation, the conversion of assets faces fairly weak limitations.[97] However, while a debtor can somewhat increase his unsecured debt in anticipation of bankruptcy, an effort to borrow a large amount in order to increase one's exempt wealth faces serious legal and practical obstacles. Legally, if the new unsecured creditors can show that the debtor misstated his financial position in order to obtain the loan, the new debt is not discharged in bankruptcy and the debtor risks a dismissal of his bankruptcy under §

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[97]These limitations do exist, however. For example, if a debtor sells enough nonexempt property to repay most of his debts, the court may dismiss his case. See *In re Swift*, 72 B.R. 563 (W.D. Okla. 1987). If one includes human capital as one of these assets, the process of buying new exempt assets with cash is less troubling; by delaying filing, one is merely trading one exempt asset for another.

523.[98] More significantly, this strategy requires that the debtor be able to find a sufficient number of creditors willing to lend him large sums on the eve of his default. The practical significance of these limitations is demonstrated by the research of Sullivan, Warren and Westbrook (1989) in which they found that bankrupt debtors, even those in Texas, had significant mortgages. As Texas has an unlimited homestead exemption, a debtor unrestricted in his ability to "plan" for bankruptcy would never file with an unpaid mortgage as he would be better off "converting" his mortgage into unsecured credit and obtaining a discharge.

To the extent that this argument is valid, one would expect marginal differences between exemptions to have a much stronger effect on the filing rate when the exemptions are low than when they are high.

C. Exemptions Have Significance Outside of Chapter 7

The previous literature reasons that exemptions increase the return to filing for a Chapter 7 bankruptcy and thus should increase both the total filing rate and the proportion of debtors who choose Chapter 7 over Chapter 13. This is true only if the exemptions make bankruptcy in general, and Chapter 7 bankruptcy in particular, *relatively* more attractive. This claim is undermined to the extent that the exemptions help protect a debtor's assets outside bankruptcy and in Chapter 13.

A simple model will help guide the discussion. Imagine a one period world inhabited by a consumer who owns an amount of personal property, P, and a home with a market value of H and a value to the consumer of H+V. In addition, the debtor

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[98]13 U.S.C. § 523.

has future earnings of K which can be reached immediately. The consumer has borrowed an amount U from a group of unsecured creditors and an amount M from a mortgage lender. I assume that M<H+V. If the debtor repays his creditors in full, he will consume H+V+K-M-U.

To model a Chapter 7 bankruptcy, assume that the debtor will be able to exempt all of his future earnings (the fresh start) in addition to an amount E_P of his personal property and E_H of the equity in his home. I assume that $P>E_P$. Because the debtor may only exempt the *equity* in his home, he only retains the home if the mortgage creditor is repaid in full *and* he has no non-exempt equity in the home; $K+E_P>M$ and $H<M+E_H$. If both of these conditions are met, the debtor's consumption is $E_P+H-M+V+K-T_7$ where T_7 represents some collection of transactions costs such as the damage to the debtor's reputation and legal filing fees. If one of these conditions is not met, the debtor will lose his home in a Chapter 7 bankruptcy and his consumption will be $E_P+Min[E_H, H-M]+K-T_7$. Note the minimum function expressed if the debtor loses his home. This reflects the proposition from above that the marginal differences in exemptions may be irrelevant if the debtor does not have sufficient equity to take advantage of them.

A Chapter 13 bankruptcy allows a debtor to retain all of his property by making payments out of his future income. Modeling the return to Chapter 13 is more difficult as the required repayment is determined by two tests. Under the "best interests of the creditors" test of § 1325(a)(4), the unsecured creditors are entitled to insist on an amount at least as great as they would have received in Chapter 7. Under this test the

exemptions have obvious significance as the debtor must repay an amount ($P-E_P$)+Max[0, $H-M-E_H$] to his unsecured creditors.

Under the "disposable income" test, created in 1984, the court can insist that the debtor repay all of his "disposable income" over the next three years.[99] This second provision may be less strict than it would appear. Courts have interpreted this provision to mean that the debtor's budget may not contain "luxuries unavailable to the average American."[100] However, given the lobbying effort of creditors to encourage Chapter 13 filings, it is probable that this provision results in either some additional payment or a deterrence to filing. I will assume that in addition to the payment required by the best interests of the creditors test, the debtor is required to repay an amount that depends on the value of his future earnings and the value of the exemptions, $R_{13}(K, E_P, E_H)$.

In order to retain the home, the debtor must be able to propose a plan in which the mortgage creditor is repaid in full and the above tests are met; the debtor must repay at least $P-E_P+ Max[M, H-E_H]+R_{13}$. If the debtor has sufficient future assets to propose a plan in which he keeps his home, $K>Max[M, H-E_H]-E_P+ R_{13}(k, E_P, E_H)$ his return is $Min[E_H, H]+V+K-R_{13}(k, E_H, E_P)-T_{13}$ where T_{13} represents the transactions costs associated with Chapter 13. If this condition does not hold the debtor will lose

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[99]13 USC § 1325(b)(1)(B). Neither a creditor nor the trustee has the right to object to a Chapter 13 repayment plan on the grounds that it fails the "disposable income" test.

[100]King, COLLIER ON BANKRUPTCY § 1325.08[4](b) at 1325-53, citing *In re Tinneberg*, 59 B.R. 634 (Bankr. E.D. NY 1986); *In re Hedges*, 68 B.R. 18 (Bankr. E.D. VA. 1986).

his home and receive $\text{Min}[E_H, H] + k - R_{13}(k, E_H, E_P) - T_{13}$.

An immediate comparison between Chapter 7 and Chapter 13 can be made. If the debtor's ability to retain his home is unaffected by his choice of Chapter, the difference in his return is simply $R_{13}(K, E_p, E_H) + T_{13} - T_7$; the debtor may be required to make an additional payment in Chapter 13 due to the "disposable income" test. If the disposable income test is binding, R_{13} is increasing in the exemptions and it is plausible to assert that larger exemptions should lead to a greater propensity of bankrupt debtors to choose Chapter 7. The possibility that the debtor's choice of Chapter may affect his ability to retain the home is also of interest. The commonly cited argument that some debtors choose Chapter 13 because they have non-exempt property that they wish to retain is reflected in this simple model. If $H < M + E_H$ (the debtor has no non-exempt equity) and $K > \text{Max}[M, H - E_H] - E_P + R_{13}$, (the debtor can afford a Chapter 13 plan in which he will keep his home) a debtor may retain the home only by filing under Chapter 13 and the difference in return between a Chapter 13 filing and a Chapter 7 filing is $V - R_{13}(K, E_p, E_H) - T_{13} + T_7$. Of course, this assumes that the debtor is unable to reach an agreement with the trustee in which he may make other payments in order to retain the home with its non-exempt equity. This also assumes that the debtor is unable to take out a home equity loan before filing to rid himself of non-exempt equity.

Without stronger assumptions, a change in E_H has an ambiguous sign. First, a rise in E_H makes it less likely that the debtor will have non-exempt equity in his home and thus less likely the debtor will need to file under Chapter 13. Second, again depending on what one thinks of the "disposable" income test, a rise in either E_H or E_P

again may increase the difference in repayment between Chapter 13 and Chapter 7. However, if the disposable income test is not binding, E_H and E_P will reduce the amount that must be repaid in Chapter 13, thus making it more likely that the debtor will be able to propose and complete a plan in which he will retain the home. In summary, if the debtor has a large private valuation of the home and courts take the disposable income test seriously, larger exemptions should increase the number of Chapter 7 bankruptcies relative to Chapter 13 bankruptcies.

To determine the effect of the exemptions on the bankruptcy filing rate or the Chapter 7 filing rate, it is necessary to define the return to the debtor's other alternative, which is simply refusing to repay and doing nothing (N). With the exception of the §522(d) exemptions and a few state exemptions,[101] most property exemptions are not limited to bankruptcy.[102] While some non-bankruptcy courts may accept a waiver of some of these exemptions,[103] it is unclear how frequently this occurs in practice. As previous scholars have already asserted that the bankruptcy filing rate should increase if the exemptions are available only in bankruptcy, I will examine the case when the exemptions are equal in and out of bankruptcy.

Both the federal government and each individual state place limitations on garnishment; the debtor is able to select the more advantageous provision. With some exceptions, the limitations are expressed as either a multiple of the minimum wage or a

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[101] Arkansas, California, Delaware, and Maryland have enacted some exemptions that apply only in bankruptcy.

[102]For a discussion of legal proceedings in which an exemption can be used, see 35 C.J.S. "Exemptions" §§ 122-128.

[103]Id. at §§ 101-118.

percentage of the debtor's income. Therefore I assume that the state allows the debtor to exempt a fraction, g, of his future income from garnishment. If the debtor defaults on both his mortgage and unsecured debts, his mortgage creditor will foreclose on the home and his unsecured creditors will attach any remaining non-exempt property and garnish his wages leaving the debtor with a return of $\text{Min}[H-M, E_h]+E_P+gK-T_n$. If instead the debtor defaults on his unsecured debt but is able to continue repaying the mortgage and has no non-exempt equity in the home, $gK+E_P>M$ and $H<M+E_H$, the debtor will retain the home and his return will be $E_P+H-M+V+gK-T_n$.

First, compare the choice between filing under Chapter 13 and doing nothing. If $K>\text{Max}[M, H-E_H]-E_P+ R_{13}(K, E_H, E_P)$ (the debtor can afford a plan in which he keeps the home) and either $gK+E_P<M$ (the debtor can't afford to keep his home without filing) or $H<M+E_H$ (the debtor has non-exempt equity) the debtor may only retain his home by filing under Chapter 13. As with the comparison between Chapter 7 and Chapter 13, an increase in the homestead exemption will likely increase the probability that the debtor can retain the home without a Chapter 13 filing and, in this case, reduce the need for bankruptcy. If the debtor's ability to retain the home is unaffected by his decision to file under Chapter 13, the difference between filing under Chapter 13 and not filing is $(1-g)K-R_{13}(k, E_H, E_p)+T_N-T_{13}$ which, if one ignores the transactions costs, appears to be *decreasing* in the exemptions. Both of these results imply that larger exemptions may lead debtors to *not* file rather than to choose a Chapter 13 bankruptcy.

One can argue, however, that the relative transactions costs do depend on the

size of the exemptions. If the debtor does not file for bankruptcy, he will be limited in his ability to decide how to consume his wealth. If he tries to convert his wealth into non-exempt form, say he wants to use some of the equity in his home to buy a fishing boat, his creditors can generally seize the non-exempt property.[104] In addition, while some exemptions merely prevent a creditor from executing on a lien, they do not prevent the lien from attaching. If, however, a debtor files for bankruptcy and obtains a discharge, he need no longer fear attachment by his creditors. As mentioned, the debtor may use §522(f) in bankruptcy to avoid liens that "place a cloud" on the debtor's title.[105] Because this ability to reallocate wealth is likely to be more valuable as the quantity of wealth increases, it may be that Chapter 13 is relatively more attractive than not filing when the exemptions are larger.

Now compare the choice between filing under Chapter 7 and not filing. Because of wage garnishment, bankruptcy may help the debtor retain his home by strengthening his ability to meet his mortgage payments. However, without stronger assumptions on the distribution of the debtor's income, it is unclear what effect the exemptions would have. If the debtor's ability to retain the home is unaffected by the decision to file for bankruptcy, the difference in the return to Chapter 7 and doing nothing is just $(1-g)K+T_N-T_7$. If the exemptions are to have any effect on the choice between these two alternatives, it must be through the transactions costs argument outlined above. Note that a defaulting debtor is *less* likely to file for bankruptcy if the

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[104]Many states allow the exemption of proceeds from the homestead for a limited time. See, for example, Ariz Stat Ann § 33-112.01.

[105]*In re Henderson*, 18 F3d 1305, 1310-11 (5th Cir. 1994).

state places more severe limitations on garnishment.

While the above model demonstrates that there is considerable ambiguity as to whether larger exemptions should lead a greater fraction of defaulting debtors to choose bankruptcy, the proposition that larger exemptions should lead to higher default rates appears much more defensible. Larger exemptions potentially increase the return to every option of the debtor save one, full repayment. If one believes that the fraction of defaulting debtors who choose bankruptcy is increasing or even roughly constant in the size of the exemptions, then one would also expect larger exemptions to lead more debtors to choose bankruptcy as more debtors choose to default.

D. Anti-abuse Provisions in the Code May Prevent Excessive Filings

In 1984, reacting to what was then perceived to be an excessive number of bankruptcy filings, Congress passed two provisions designed to make it harder for debtors to take advantage of a generous bankruptcy code: the "disposable income" provision of §1325(b) discussed above and the "substantial abuse" provision of § 707(b). Above it was shown that the "disposable income" test may mean that the required payment in a Chapter 13 plan does not depend on the exemptions. In addition, if the "substantial abuse" provision is interpreted strictly, then the larger exemptions may not lead to higher filings simply because the marginal debtors are not permitted to file.

If the debtor holds primarily consumer debts, a court may dismiss a bankruptcy filing if granting a discharge would be a "substantial abuse" of the bankruptcy code. Although "substantial abuse" is not defined in the code, "[t]he primary factor that may

indicate substantial abuse is the ability of the debtor to repay the debt out of future disposable income" either in a Chapter 13 plan or otherwise.[106] Many debtors who have sufficient assets to take advantage of the exemptions may also have a large expected future income. Further, recall that the repayment in Chapter 13 may be determined not by the exemptions but by the disposable income test. If this is the case, the debtor would be unable to utilize bankruptcy to avoid repayment; the incentive effects of the exemptions would be irrelevant. Note that these are *bankruptcy* provisions. A debtor may still use the exemptions to default without filing. Therefore this criticism has less force when one can examine the default rate more generally.

E. The Option Value of Not Filing May Increase in the Exemptions

The debtor's borrowing and repayment decisions are in reality complicated decisions made in a multi-period framework. White and Petropolous (1996) utilize this point as they seek to explain some of the "missing" bankruptcy filings by suggesting that some debtors do not file for bankruptcy because of an "option value" of waiting. That is, these debtors have assets greater than the value of the exemptions and therefore may gain by waiting before filing. This logic reinforces the claim that larger exemptions should lead to higher filing rates.

Given that a debtor who has filed under Chapter 7 may not do so again for six years,[107] it is unclear if this would be the prediction of a richer dynamic model. A contrived example illustrates this point. Assume that the debtor is finishing his

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[106]King, COLLIER ON BANKRUPTCY § 707.04940 at 707-20 fn4.
[107]13 U.S.C. § 707.

residency in plastic surgery and that the exemption is larger than the value of his stock of physical assets. Although the debtor may gain from filing under Chapter 7, he may not as he would lose the option to file again under Chapter 7 for six years. This may be very significant if the debtor faces a risk of malpractice claims. In fact, this option to file may become more valuable as the exemptions increase as the debtor will likely have sufficient assets to make use of the larger exemptions. Therefore, it may be the debtors who currently have no non-exempt assets but may have significant assets in the future who refrain from filing. If this is the case, larger exemptions may actually reduce the number of filings in a certain class of debtors. While this story is obviously contrived, it demonstrates that a richer model may reach conflicting conclusions.

II. Additional Empirical Difficulties

Even if larger exemptions do lead to higher bankruptcy and default rates or a greater fraction of bankrupt debtors choosing Chapter 7, there are several reasons why one might not find these results with the techniques used in the previous literature. By making use of changes in the exemptions over time, I am able to control for some, but not all, of these difficulties.

A. Omitted Variables

Even when one restricts one's attention to the variables suggested by the above analysis, it is clear that there are significant variables that must be excluded from the analysis. For example, while one would like to include data on the asset and debt holdings of the populations of each state, this data is not publicly available at the state level for years after 1983. More significantly, there are certainly other significant

variables that were not examined in the above analysis or considered by this author.

This problem of omitted variables is not unique to this study as every empirical model omits significant variables either through necessity or lack of imagination. If the model is linear and the omitted variables are uncorrelated with the variables of interest, the estimates will be consistent, if inefficient. However, the assumption that the omitted variables are uncorrelated with the exemptions is problematic given that many of these variables may be other laws.

Although no model of the choice of exemptions is presented in this (or any published) paper, it is not hard to imagine that this choice is in some way correlated with the choice of other laws that regulate the credit market such as usury laws, limitations on deficiency judgments, or limitations on the ability of a mortgage company to foreclose. These laws could potentially affect the quantity and terms of credit as well as the ability of a debtor to avoid repayment without filing for bankruptcy. In addition, some debtors may file for bankruptcy simply to delay a home foreclosure. If this is true, then a state's foreclosure laws would presumably affect the filing rate. These other correlated laws could potentially affect both the filing and default rates.

Even if one could specify and measure all of these other laws and other factors such as the attitude of the local judiciary and cultural attitudes towards repayment, a cross-sectional analysis of the filing or default rate in each state would be unable to disentangle their effects from the exemptions as there are only fifty-one observations, fifty states and the District of Columbia. This problem cannot be avoided by using county or individual level data. Everyone within a state faces the same exemption law

and the same credit market laws. There are at most fifty-one bundles of state laws.

The use of longitudinal data alleviates this problem. In the panel regressions I follow the filing rate in the fifty states and the District of Columbia over 17 years; in the quasi-experiment section I follow a subset of states over seven years. I do not attempt to specify every legal change that might affect the filing or default rate. I will employ fixed state effects and fixed state trends to attempt to control for these and other unmeasured or unmeasurable factors. While it is possible that my results will be biased by the omission of some significant variables, this is less likely than in the cross-sectional analysis as the variables would need to change at approximately the same time as the exemption variables in each state. While I did not search for every law which could potentially affect the filing rate (I would have included them in the analysis), it is at least clear that changes in the law most related to exemptions, garnishment, did not coincide with changes in the exemptions. While there were numerous changes in exemptions since 1978, only two states significantly changed their garnishment laws.

B. Codifying the Exemptions

Unfortunately, the exemptions vary not only by generosity but also by structure, making it extremely difficult to convert their variation into a useful variable. This difficulty is evidenced by the inconsistency in the treatment of the exemptions used in the previous literature. I discuss some of the more serious obstacles to valuing the exemptions and the assumptions that I make in order to proceed with the cross-sectional and general longitudinal analysis. However, this difficulty in codifying the exemptions is one of the primary reasons that I include the quasi-experiment results of

Section V. By focusing on the change in the federal exemptions in 1994, I am able to conduct a test that is far less sensitive to subjective judgments about the generosity of a state's exemptions.

1. Inconsistency in the Previous Literature

The inconsistent results reached in the previous literature may be due in part to the inconsistent codification of the exemptions. Each of the primary studies of the effect of the exemptions on the filing rate used a different method of measuring the generosity of the exemptions. Perhaps adding to the confusion, I do not follow any of these methods as they are either flawed or based on an unstated methodology that is impossible to reproduce.

Peterson and Aoki base their assessment on qualitative judgments of a state's generosity.[108] Although they identify which states are classified as generous, they do not specify their decision rule and I am unable to use the statutes to create a decision rule which yields the same classification. White excluded the homestead exemption from her analysis based on the assumption that few bankrupt debtors would own a home.[109] Both Shiers and Williamson and Sullivan and Worden *only* consider the homestead exemption.[110] As Sullivan, Warren and Westbrook found that approximately half of all bankrupt debtors own a home,[111] both of the above assumptions are problematic. As I discuss below, it is very difficult to measure the

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[108]Peterson and Aoki, 36 J Econ Bus at 98-99.
[109]White, 63 Indiana L J at 42.
[110]Shiers and Williamson, 21 J Consumer Affairs at 287; Sullivan and Worden, 24 Journal of Consumer Affairs 69 (1990).
[111] Sullivan, Warren and Westbrook AS WE FORGIVE at 129

personal property exemptions. However, under one method of measuring generosity, the correlation coefficient between the amount a debtor with a home could exempt and a debtor without a home could exempt in 1996 is near zero, -0.05.[112]

2. Problems with Specifying the Generosity of Exemptions

a. Exemptions Vary by the Characteristics of the Debtor

Many exemptions depend on the characteristics of the debtor. Unfortunately, the treatment of the various groups is inconsistent across states and across time. Some states allow married debtors to double certain exemptions when filing jointly while others do not.[113] Some states specify larger exemptions for senior citizens, the disabled, heads of family or veterans while others do not.[114] Some states provide increased exemptions for debtors with dependents.[115] This complexity makes it impossible to specify a single ordering of generosity. As I cannot use all possible specifications, I will assume that all debtors are married, have two children, live in urban areas and do not qualify for increased exemptions due to their age, disability or veterans status.

b. Special Considerations Relating to the Homestead Exemption

The homestead exemption poses two unique difficulties. First, many states,

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[112]This is the correlation between the aggregate amount of value that a debtor with a home and a debtor without a home could exempt if one only considers cash and home equity.

[113]For example, Massachusetts does not allowed married couples to double the homestead exemption while Nebraska does. Mass Gen. Laws. Ann. Ch. 188 § 1. Neb. Rev. Stat § 40-101.

[114]For example, a debtor 65 or older in Massachusetts may exempt up to $150,000 in his home while other debtors may exempt up to $100,000. Mass Gen. Laws. Ann. Ch. 188 §§ 1 and 1A.

[115]See, for example, Utah Code Ann. § 78-23-4.

including all states with an "unlimited" homestead exemption, impose acreage limitations on the homestead exemption. While the acreage limitation for rural areas is often quite large, it is typically much smaller for urban areas.[116] Second, in many states the homestead exemption will be irrelevant for those debtors who do not have a home. Of course, this is again inconsistent across states as some states allow the debtor to use a portion of the unused homestead exemption as a wildcard exemption through a "spillover" provision.[117] As the homestead exemption typically represents a large portion of the value of most state's exemptions and Sullivan, Warren and Westbrook determined that roughly half of all bankrupt debtors have homes, I make alternative assumptions. First, I assume that the debtor has a home on a plot sufficiently small that no acreage limitations are binding (h). Second, I assume that the debtor has no home and thus must make use of the spillover provision (n).[118]

c. Wildcard versus Specific Exemptions

While a few states, such as Delaware and Maryland, rely heavily on wildcard exemptions, they are more the exception than the rule. Most states have highly specific exemptions which may or may not contain an explicit dollar limit. Often, the sole

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[116]For example, in Arkansas an urban debtor who owns more than ¼ of an acre faces a $2,500 limit on his homestead exemption. If he owns more than 1 acre, the limit is $1,250 for married debtors. By contrast, if the debtor lives in a rural area, he may exempt up to eighty acres. Ark. Code Ann. § 16-66-210.

[117]For example, since 1984 debtors have been able to use up to half of the § 522(d) homestead exemption as a wildcard exemption. Prior to 1984 they could use all of the homestead exemption as a wildcard exemption.

[118]I also tried assuming that all plots were on a parcel slightly larger than 1/2 acre. However, this did not significantly change the results. As this increases the number of permutations, I omit this specification from the tables presented.

limitation on the exemption of clothes or furniture is that they are for the use of the debtor or deemed "necessary" by a court.

From a pragmatic standpoint, an assumption of complete fungibility of assets is therefore unworkable as it results in too little variation; too many states will have "unlimited" exemptions due to their personal property or pension exemptions.[119] In addition, there are sound reasons for rejecting this assumption. As discussed above, there are still some limits on the ability of a debtor to convert non-exempt assets into exempt form. More importantly, transferring wealth from non-exempt form to exempt form and back again may be very costly especially when the exemption is in property such as clothes or furniture which may have very low resale values. Classifying these exemptions as "unlimited" would grossly overstate their generosity. However, excluding these exemptions overstates the exemptions available in those states that rely heavily on wildcard exemptions as they must anticipate that some of this exemption will be used for clothes and furniture.

Rather than make subjective judgments of whether or not a state is generous based on unexpressible reasoning or specify arbitrary dollar limits for each category, I limit my focus to exemptions in fairly valuable property and make alternative assumptions. First, I calculate only the amount of cash or home equity the debtor can exempt ("c" for cash). Second, I add the value of the car that the debtor may exempt (n for narrow). Third, I add the value of "tools of the trade" that may be exempted (w for wide). Finally, I add the value of jewelry, including wedding and engagement rings,

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[119]See Gropp, Scholz and White (1997).

that a debtor may exempt(v for very wide).

d. Stacking

Prior to 1984, married debtors living in a state that allowed the use of the federal exemptions would sometimes file with one spouse choosing the federal exemptions and the other choosing the state exemptions. This process, called "stacking," was particularly valuable in states that did not allow married debtors to double the homestead exemption. To control for this, I calculated the amount that could have been exempted through stacking, when available. Note that stacking was only available in bankruptcy.

e. Contracts Clause

In part because they feared that states would pass laws limiting a creditor's ability to collect from a debtor,[120] the drafters of the Constitution inserted a clause that prohibited states from passing legislation which would retroactively change the obligations of contracts, the "Contracts Clause."[121] Originally it was well settled that exemptions could not apply against debts incurred before the creation of the exemption. However, cases since the New Deal are inconsistent with the result depending on both the court and the specifics of the statute. Some courts have held that the application of an exemption statute against a pre-existing statute is

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[120]See John E. Nowak and Ronald D. Rotunda, Constitutional Law § 11.8, page 406 (West 1995).

[121]U.S. Const. art I, § 10, "No State shall . . . pass any . . . Law impairing the Obligation of Contracts." Note, this provision does not apply to the federal government.

constitutional[122] while others have ruled it is unconstitutional.[123] Note that the cited cases include some that have apparently been overruled by subsequent cases and were valid law at some point during the period studied. Therefore, to accurately gauge the exemption that a debtor expects to receive in bankruptcy, one would need to research the history of changes in each district and then make a determination for those districts in which the issue was undecided. One would also need to know the average age of the debt. This is obviously a significant problem for both the cross-sectional and panel regressions, particularly with data sets from the 1980's when statutory changes in the exemptions were fairly frequent. This is further complicated by the fact that I only know the year of a legal change.

As there is no ideal solution to this problem, I simply assume that any change in law took effect in the next fiscal year.[124] Rather than engage in a significant amount

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[122]See, for example, *In re Seltzer*, 104 F.3d 234 (9th Cir. 1996); *Matter of Towns*, 74 B.R. 563 (Bankrtcy. S.D. Iowa 1987) (holding that Iowa's exemption laws are remedial and therefore operate retrospectively); *In re Van Hove*, 78 B.R. 917 (Bankrtcy. N.D. Iowa 1987) (applying increase in exemptions retroactively)

[123]See, for example, *In re LaFortune*, 652 F.2d 842, 848 (9th Cir.1981) (state law permitting homestead exemption without prior filing or recording); *In re Bassin*, 637 F.2d 668, 670 (9th Cir.1980) (state law increasing the homestead exemption from $20,000 to $30,000); *England v. Sanderson*, 236 F.2d 641, 643 (9th Cir.1956) (state law increasing homestead exemption from $7500 to $12,500) *In re Sticha*, 60 B.R. 717 (Bankrtcy. D. Minn. 1987) (holding increase in exemption could not be constitutionally applied to avoid bank's lien which existed before amendment.); *In re Ree*, 114 B.R. 286 (Bankrtcy. N.D. Okl. 1990) (refusing to apply increase in exemptions as bulk of debtor's unsecured debts incurred before enactment of increase). *First Nat. Bank of Mobile v. Norris*, 701 F.2d 902 (C.A. Ala 1983) (holding that applicable exemptions were those in existence at time debts were created.); *In re Bradley*, 19 B.R. 265 (Bankrtcy. Ala 1982).

[124]To check the sensitivity of the results to this assumption, I reran many of the regressions with a lag of an additional year but found no major differences in the results. A subset of the regressions with longer lags are presented in the Appendix.

of additional legal research and make several highly subjective assumptions, I again rely on Section V to provide a check on this assumption. Section V looks only at the change in the federal exemptions in October of 1994, conveniently close to the September 30 date used by the Administrative Office of the United States Courts. The Contracts Clause does not apply to the federal government and thus there is no uncertainty as to the effective date.

f. Unlimited Exemptions

Unless one considers only the cash "c " that may be exempted by a non-homeowner, at least one state will have an apparently "unlimited" exemption. I try two basic methods for dealing with the unlimited exemptions. When using a continuous measure of the exemption, I assign the maximum observed value to the unlimited exemptions and then provide an additional dummy variable indicating the unlimited value. Alternatively, I provide dummy variables for the generosity of the exemptions as discussed below.

g. Some Exemptions are Available Outside of Bankruptcy

As mentioned in Section I.C., some exemptions are only available in bankruptcy while other exemptions are available whether or not the debtor files for bankruptcy. The analysis of Section I implies that the debtor's decision depends both on the size of the exemption in bankruptcy and the difference between the exemption in bankruptcy and the exemption available outside of bankruptcy. Therefore, based on the assumptions above, I calculated the exemption available to a debtor inside bankruptcy

(i) and outside bankruptcy (o) in each state in each year.[125]

C. Endogenous Exemptions

Both Shiers and Williamson and Peterson and Aoki recognized that measuring the effect of the exemptions on the filing rate is made more difficult due to the presence of a simultaneity problem; the legislature in a state may look to the expected filing rate in setting the exemptions. Although both studies argued that a high bankruptcy filing rate will influence the legislature to adopt less generous exemptions,[126] the theoretical sign of this bias is uncertain absent stronger assumptions. Both studies argue that state legislatures would see the high filing rate as a problem and adopt lower exemptions. However, one might also argue that high filing rates lead to larger exemptions as high filing rates mean that more debtors wish to have access to the exemptions and are willing to lobby for an increase in generosity.

Shiers and Williamson attempt to prove their theory by demonstrating that those states that had higher filing rates in 1978 were more likely to quickly opt out of the federal exemptions.[127] This is unsatisfying evidence for four reasons. First, not all states that have opted out have adopted smaller exemptions. In fact, four of six states that provide the "unlimited" homestead exemption do not allow their debtors to use the federal exemptions. Second, the fact that a state with a high filing rate has chosen to

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[125]This leaves me with sixteen basic exemption measures, eohc, eohn, eohw, eohv, eonc, eonn, eonw, eonv, eihc, eihn, eihw, oihv, einc, einn, einw, einv. All but einc contain some "unlimited" observations.

[126]Peterson and Aoki, 36 J Econ and Bus at 100.; Shiers and Williamson, 21 J Consumer Affairs at 290.

[127]Shiers and Williamson, J Consumer Affairs at 290-91.

opt out is consistent with other explanations. State legislatures may seek to use exemption policies to gather support from interested groups. As politicians could potentially gather more support through their choice of bankruptcy exemptions when the filing rate is higher, those states should be the first to opt out in order to better solicit lobbying efforts. (Posner 1997). Third, Shiers and Williamson's interpretation is inconsistent with the fact that exemptions have continued to increase, at least in nominal terms, while the bankruptcy filing rate has more than quintupled since 1978. Since 1978 only one state, Minnesota, has reduced the homestead exemption available to married debtors,[128] and even this reduction still left married debtors with a homestead exemption of $200,000. Finally, an assertion of a strong simultaneity bias is inconsistent with the low correlation between the exemptions available to debtors with and without homes. If states were trying to be "stingy" in response to high filing rates, they would presumably do so with regard to the exemptions available to both groups.

This potentially serious problem is not resolved through the use of longitudinal data as states may choose to change or not change their exemptions according to their expectations of bankruptcy filings or default. Unfortunately, no study suggests variables that may be used as an instrument to help control for this problem and no variables are readily apparent. One can make the assertion that the change in the

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[128]In 1982 Illinois reduced its homestead exemption from $10,000 to $7,500. Ill. Rev. Stat. 735-5/12-901, 735-5/12-906. However, Illinois also extended this exemption from "householders having a family" to "individual[s]." As married debtors may now double the exemption, this statutory change *increased* the exemption for all but single heads of household. See *First National Bank v. Mohr*, 515 N.E. 2d 1356 (App. Ct. Ill. 1988)

§522(d) exemptions can control for this affect. As discussed in Section V, this claim is open to criticism.

III. Cross Sectional Analysis

Given the conflict in the results of the literature and the disagreement over how to value the exemptions, I first reconstruct the cross-sectional analysis. I find that the results are sensitive to the specification chosen. Consistent to the previous literature, I find that the proposition that larger exemptions lead to higher filing rates is supported by some specifications but is either not supported or contradicted by most specifications. Also consistent with the previous literature, I find some support for the proposition that larger exemptions available to homeowners lead to a greater proportion of bankrupt debtors choosing Chapter 7. However, this result does not appear to be robust against all such specifications and is not supported by specifications which consider the exemptions available to non-homeowners.

A. Data

I chose to study bankruptcy filings in 1992 as I originally relied on exemption valuations provided by White and Petropolous. Previous authors suggested numerous possible control variables when explaining the filing decision. I collected as many of these variables as practical. Given the limited number of observations, only a few of these variables could be included in any regression resulting in a large number of possible specifications. Below, I present only a subset of the specifications tried. This

subset demonstrates that the results are highly sensitive to the specification chosen.[129]

In addition to various specifications of the exemptions, the presented regressions include the divorce rate per thousand (Divorce),[130] the unemployment rate (Unemp), median family income expressed in thousands of dollars (Inc), the percent of a state's citizens without health insurance (Health) the percent below the poverty rate (Pov), the percent that live in metropolitan areas (Metro), the percent that own their own home (Home), the number of individuals per thousand with gross assets greater than 600,000 but net wealth less than 10,000,000 (Wealth) and whether or not garnishment was prohibited for general creditors.[131]

Divorce, unemployment, and the lack of health insurance are included to control for the "shock" explanation of bankruptcy. According to this theory, each of these three variables should take a positive sign. Divorce may also take a positive sign because it serves as a social indicator; divorce may reflect a willingness to breach a

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[129]I tried numerous variables other than those listed below but do not include them in the presented analysis due to a lack of theoretical justification or a lack of significance in step-wise regressions. These variables included measures of the importance of farming, and the age and racial distribution of the population. I also tried using a grouped probit model to estimate the equations. While the grouped probit model has the advantage of an outcome restricted between zero and one, the orthogonality of omitted variables is insufficient to guarantee consistent results. I believe the omission of variables to be a big problem in the cross-sectional analysis. I omit these results from the tables for this section as they provide no further insight. However, I include both linear probability and grouped probit regressions in later sections.

[130]Unfortunately, the divorce rate is not collected in every state resulting in some lost observations.

[131]Garnishment is prohibited in Florida, North Carolina, North Dakota, Pennsylvania, South Carolina, South Dakota, and Texas.

contract.[132] Moreover, divorce may also result from financial distress due to an increase in marital discord and thus may share a common cause with bankruptcy. This does not imply a simultaneity problem as the discord likely results from financial distress and not from the filing for bankruptcy.[133] It is uncertain whether any of these variables should affect the choice of Chapter 7 versus Chapter 13 unless they change the mix of individuals filing for bankruptcy.

Metro is included as it is thought that those living in urban areas may have better information about bankruptcy and may face less social stigma from breach; when examining the filing rate or default rate the sign on Metro should be positive. Home should take a negative sign in the filing rate regressions as it is thought that those owning a home are less likely to file.

Divorce, unemployment and median income were taken from 1991 as previous researchers have asserted that there is a lag between the shock to the individual's income or expenditures and the filing date.[134] In 1992 the Administrative Office of the U.S. Courts used a September 30 fiscal year making the actual lag nine months. Wealth was taken from 1989 as this was the closest year provided by the Internal Revenue Service. Health was taken from 1994 as this was the earliest year available from the Department of the Census's homepage. All other variables were taken from 1992.

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[132]See F.H. Buckley and M.F. Brinig, *The Bankruptcy Puzzle*, George Mason University Working Paper, No. 21.

[133]One can imagine a story in which married debtors who reside in a state that does not allow them to double the exemptions may divorce in order to increase their exempt assets. However, I have not heard of this practice and assume that this effect is negligible.

[134]See, for example, Sullivan, Warren and Westbrook, AS WE FORGIVE at 95-96.

As a limitation on garnishment is just another form of exemption, it warrants special mention. Section I implies that greater restrictions on garnishment should reduce the number of defaulting debtors who file for bankruptcy and thus may reduce the filing rate. Put simply, if the debtor can default and protect his future earnings without filing, there may be no reason to choose bankruptcy. However, if one examines the default rate, restrictions on garnishment should lead to higher default rates. I include a dummy variable for those states that completely ban garnishment for general creditors (GP). The results are not significantly changed if I use a dummy variable for those states with restrictions on garnishment that are more severe than the federal restriction.

When examining the choice between Chapter 7 and Chapter 13, most of these variables are not of obvious relevance if the debtor first makes the decision to seek bankruptcy and then decides on the relevant Chapter. I include only Home, Metro, and Health. According to previous scholars, home ownership should induce a greater portion of bankrupt debtors to choose Chapter 13 to protect their most valuable asset and thus one would expect a positive sign. To the extent that Chapter 7 carries a larger stigma than Chapter 13, one would expect Metro again to be positive. Health insurance coverage may have some effect on the type of debtors who are filing for bankruptcy. While the same may be said for unemployment and other shock variables, I present these specifications only as illustration and thus do not seek to justify this particular specification as superior to all others.

As explained above, I try several alternative specifications of the exemptions. I

try both continuous and dummy variables. For the dummy variables, I simply divide the states into quartiles with the largest quartile representing those states with "unlimited" exemptions under that specification.[135] The continuous specifications are made more difficult by the presence of so called "unlimited" exemptions when anything other than the cash that may be exempted by non-homeowners (einc) is considered. These states are assigned the highest observed exemption; in some specifications I then include a dummy variable for the presence of an unlimited exemption. In order to account for the fact that some exemptions are available only in bankruptcy, I also try some specifications which include both the value of exemptions available within bankruptcy (eihn etc.) and the value of exemptions available outside of bankruptcy (eohn, etc.)

B. Results

1. Filing Rate

All specifications are least linear probability models using robust standard errors weighted by the adult population. The results presented in Tables III.FT and III.F7 do not support the hypothesis that larger exemptions will lead to higher filing rates. While it is possible to specify a regression that would reach this conclusion, this is very sensitive to the variables chosen and whether or not one regresses the total filing rate or the Chapter 7 filing rate. These results may at least partially explain the conflict in the previous literature. The two presented regressions which support the Simple

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[135]This does not always represent a precise quartile. For example, eihc is broken into eqihc1, eqihc2, eqihc3, and eihcu where eihcu represents unlimited exemptions. The only exception is einc which has no unlimited observations. Eqinc1 represents all states with an exemption of zero under this specification and eqinc2, eqinc3, and eqinc4 evenly divide the remaining states by value. See Table E.

Hypothesis at the usual standards of significance regresses the total filing rate on a measure of exemptions which considers only those amounts that can be exempted by non-homeowners. See Table III.FT. This is similar to the test run by White (1987/88).[136] Controlling for potential non-linearities does not seem to change the result. That is, one cannot say with confidence that the filing rate is larger in states with unlimited exemptions than in states with exemptions that are in the bottom quartile.[137] Even more troubling, although statistically insignificant from zero, the regressions imply that larger exemptions available *outside* of bankruptcy lead to higher filing rates while larger exemptions available *within* bankruptcy lead to lower filing rates. This is directly counter to what the above theory predicts.

The signs on other coefficients also conflict with that which was predicted. The signs on some variables, such as Home and Health, were insignificantly different from zero and thus were deleted from many of the specifications presented. Although usually insignificant, the coefficient on unemployment implies that higher unemployment results in *lower* filings.

Although the primary message of this section is that the cross-sectional analysis is problematic at best, it is interesting to note that the coefficient on garnishment is negative and significant in every regression. This result supplies some support for the

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[136]Of course, Professor White conducted her analysis with county level data. While this is preferable to this state level test, the longitudinal regressions I present later complement her work.

[137]Only one state, Louisiana, had an "unlimited" exemption under einn. As Louisiana did not report its divorce rate in 1991, it was omitted from the sample and einnu was omitted as a variable when examining the quartiles. In effect, the states were grouped into thirds.

economic model of bankruptcy as it seems that individuals will not file when they do not need to do so to protect their future earnings after a default.[138] Unfortunately, this question cannot be readdressed in the dynamic setting as the laws on garnishment change too infrequently.

2. Choice of Chapter

In this section I seek to explain the percentage of bankruptcy filings that are Chapter 7 filings. In Table III.C I present the results of linear probability models using robust standard errors weighted by the number of total filings.

When one examines the exemptions available to homeowners, one finds some support for the proposition that larger exemptions lead a greater proportion of bankrupt debtors to choose Chapter 7.[139] This proposition is not supported when one considers the exemptions available to non-homeowners. If it is the case that, because of the disposable income test, larger exemptions increase the return to a Chapter 7 filing without increasing the return to a Chapter 13 filing, then this should hold for non-homeowners as well as homeowners. However, as discussed above, it is possible that the larger exemptions should lead more homeowners to choose Chapter 7 as they no longer have non-exempt equity. Finally, it is possible that this result is due to state specific effects which have resulted in misspecification.

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[138]Of course, this may also be a result of a restriction in credit supply in a state as a response to the restriction on garnishment.

[139]All finite exemptions had a value of less than 200 meaning that even the quadratic specifications imply that the exemptions have a positive effect on the fraction of bankrupt debtors choosing Chapter 7.

IV. Panel Regression

In Sections I and II, I gave numerous arguments for why the cross-sectional analysis might fail to find the expected results. In Section III, I confirmed that this failure does not stem merely from mismeasurement of the generosity of the exemptions. In this Section IV, I seek to improve upon the cross-sectional analysis by making use of all changes in personal property and homestead exemptions between1980 and 1996.

This use of both time series and cross-sectional variation allows me to include fixed state effects and fixed year effects to control for omitted variables without having to measure or even specify them. These fixed effects are meant to control for effects such as state credit regulations and attitudes of the general public and the judiciary toward bankruptcy. Of course, some of these attitudes and laws will change over time and it is even possible that these changes are correlated with changes in the exemptions. Given the infrequent changes in the law of garnishment, however, I assert that this results in less bias than in the cross-sectional analysis. The use of the fixed effects does have one drawback; I must exclude variables, such as garnishment, that do not change significantly over time.

In this section I present the results of both linear probability models (LP) and grouped probit models (GP). In addition to the fixed state effects described above, I also include some specifications with fixed state trends as well (Trend). The justification for these state specific trends is less obvious than the state specific effects. It is possible that they reflect different rates of learning about bankruptcy. However,

they may also reflect some of the impact of changes in the exemptions.

A. Data

The dependent variables are again based on the number of bankruptcy filings reported by the Administrative Office of the U.S. Courts[140] and the adult population in each state. Most variables examined in Section III had to be excluded as I could not gather the data for a sufficient number of years. I did collect yearly observations of unemployment, median family income, poverty, the divorce rate, and home ownership.[141] As above, I lag unemployment, income, poverty and divorce by one year. To check for non-linearities, I include squared terms of the relevant variables. I use the same exemption variables as in Section III.

As described in Section II, determining the effective date of a change in the exemptions is quite difficult. As I only know the year in which the exemptions change, not the date, I assume that the change takes effect in the next year's filings.[142] There are two sound reasons for assuming that a lag is necessary. First, the Administrative Office of the U.S. Courts used a June 30 fiscal year until 1991 and a September 30 fiscal year thereafter. Second, because of the Contracts Clause of the U.S. Constitution, there is at least some doubt as to whether the exemptions are valid against creditors with claims that existed prior to the change in the exemption. To

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[140]The number of filings in 1980 covered only a nine month period. Therefore I multiplied the number of filings in that year by 4/3.

[141]I do not present the regressions which include home ownership as an explanatory variable as this variable was generally insignificant, did not change the results, and was only available for a subset of the years.

[142]I also tried a lag of an additional year. This did not seem to significantly affect the results. A subset of these results is presented in the Tables.

control for inflation, I express all monetary exemption values in 1996 dollars.

B. Results and Implications

A major theme of this paper is that there are several reasonable alternative assumptions upon which the analysis can be based. Therefore, this chapter endeavors to include too many alternative specifications. When the explanatory variables of the previous section are omitted, see Table IV.1, the fixed state and fixed year effects explain over ninety percent of the variation.[143] When these other variables are included, the state and year variables remain highly significant. This confirms that there are many important explanations for differences in the filing rates that are not included in the cross-sectional analysis.

To the extent that the exemptions do not change significantly over time, there is a potential serious problem with multi-collinearity as I have included fixed state effects. Due to statutory changes and inflation, this does not pose a significant problem with the continuous specification of the generosity of exemptions is used. When the quartiles are used there is still a substantial amount of variation. When one uses **eihc** to measure the generosity of the exemptions, 17 states did not change quartiles, 18 states changed once, 13 more changed two times and 3 changed three times. There is a potential problem associated with the unlimited exemptions, however. Only Minnesota changed between the "unlimited" quartile and another (it did so in 1985 and in 1993).

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[143]To allow comparison, I exclude those states which do not report divorce rates from the Chapter 7 and total filings regressions.

1. Filing Rate

Tables IV.FT.GP and IV.FT.LP present the analysis of the total filing rate; Tables IV.F7.GP through IV.F7.LP present the analysis of the Chapter 7 filing rate. These regressions contrast sharply with the cross-sectional results both because they provide moderate support for the proposition that larger exemptions lead to higher filing rates and because they are much more robust against alternative specifications. If the "basic" specification is used, that is the continuous exemption is simply capped at the highest observed real value, the sign on the coefficient of almost all of the tested measurements of the generosity of the exemptions is now positive and is usually significant implying that larger exemptions do indeed lead to higher filing rates. This holds true whether one examines total filings or Chapter 7 filings, whether one employs a grouped probit model or a linear probability model and whether one uses a lag of six months or eighteen months. The inclusion of state specific trends seems only to make this result stronger.

To control for potential non-linearities associated with the exemption, a squared term and a dummy for "unlimited" exemptions is included with the continuous variable. Alternatively, I again divide the exemptions into quartiles with the largest quartile generally representing "unlimited" exemptions.[144] divided into quartiles. Under these

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[144]For example, **eihcu** represents those states for which a homeowner can exempt an unlimited amount of cash and home equity. The remaining states are then ranked and divided into thirds (**eqihc1, eqihc2,** and **eqihc3**). As discussed above, there are no states for which **einc** is unlimited. **eqinc1** is therefore categorized as those states for which **einc**=0. The remaining states are then ranked and divided into thirds (**eqinc2, eqinc3, eqinc4**).

specifications the results are still moderately supportive of the Simple Hypothesis.[145] Again, however, the support is not overwhelming as a few of the specifications give surprising results. For example, in when quartiles are used in a linear probability model, see Table IV.FT.LP, some of the coefficients are significantly negative (the lowest exemption quartile is the control) at least at the fifteen percent confidence level. Moreover, the coefficient is not always increasing as one goes from the second to the third or the third to the fourth quartile.

It is interesting to note that the counterintuitive result of the cross-sectional analysis that higher unemployment leads to *lower* filing rates no longer holds.[146] Unfortunately this puzzle has been replaced by another; the coefficients on the divorce rate imply that higher divorce rates may actually lead to lower filings.[147] These coefficients are not significantly different from zero, partially saving the author from a difficult result. While there is no obvious solution to this puzzle, it appears that the strong results associated with divorce in the cross-sectional analysis may be due to cultural explanations rather than the shock of divorce.

In Section II I suggested several reasons for why the cross-sectional analysis may have failed to find the predicted results and why the longitudinal analysis may be preferable. For some, however, the puzzle posed by this section is not why the results

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[145]For interpretation of the quadratic specification, it is important to note that the exemptions are expressed in thousands of dollars so that well over half (524 out of 867) have a value of less than 100.

[146]That is, unemployment would have a positive effect over the observed range. The maximum observed value of unemployment in the sample was 18%, or 18.

[147]The observed divorce rates ranged from approximately two per thousand to 17 per thousand (2 to 17).

more strongly support the Simple Hypothesis, but why the results are not overwhelming. As discussed in Section I, it is entirely possible that the Simple Hypothesis is simply wrong. In addition, many of the difficulties discussed in Section II remain unresolved. First, although many alternatives were tried, the valuation of the exemptions remains subjective. Second, the Contracts Clause prevents a precise determination of the effective date of most changes in state exemptions. Third, it is difficult to control for the fact that some exemptions are available both in and out of bankruptcy. Fourth, the panel analysis does not solve the simultaneity problem; states may still look to expected changes in the filing rate in setting their exemptions. Fifth, this section could not control for the creditor reaction to the exemptions. Finally, many debtors simply do not have enough wealth to make marginal differences in the exemptions relevant.

2. Choice of Chapter

While this dissertation is admittedly more concerned with the filing rate, the data can be used to examine the choice of chapter by bankrupt debtors. Tables IV.C.GP and IV.C.LP present the results of specifications which regress the proportion of bankrupt debtors who choose Chapter 7 on explanatory variables. This section uses only the exemptions and the state and year dummies as control variables as the variables used in explaining the filing rate are not clearly relevant to this section.[148] If no state specific trend is included, the results do support the proposition that larger

[148]I tried including the percentage home ownership (Home) and $(Home)^2$, but these variables were statistically insignificant and did not change the results.

exemptions lead more bankrupt debtors to choose Chapter 7. This is less true if one uses the exemption quartiles. However, this may be due to an insufficient number of states changing quartiles. As before, this result is stronger if the exemptions available to homeowners are examined; however, the difference is not as dramatic as in the cross-sectional analysis. If state specific trends are included, the data no longer supports this hypothesis.

Once again the results support the standard predictions about bankruptcy but are not definitive. It is unclear if this is due to a flaw in the hypothesis or to the empirical limitations enumerated above.

V. 1994 Change in the § 522(d) Exemptions as a Quasi-Experiment[149]

This section models the change in the § 522(d) exemptions in 1994 as a natural experiment or quasi-experiment. Because of this, this section makes use of far fewer observations and changes than were used in Section IV. However, this specification allows me to address many of the difficulties of Section IV and thus serves as a good complement to that section.

When utilizing the change in the § 522(d) exemptions I do not need to make as many assumptions in valuing the exemptions as I need only determine whether a state has "opted out" of the § 522(d) exemptions and whether the state exemptions were substantially more generous than the § 522(d) exemptions. In addition, the § 522(d) exemptions are only available in bankruptcy thus making it more obvious that they

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[149]For a discussion of the quasi-experiment literature, see Bruce Meyer, *Natural and Quasi-Experiments in Economics*, 13 J of Bus and Econ Stats 151 (1995).

make bankruptcy relatively more attractive. It should be noted, however, that the § 522(d) exemptions may still have an effect on the repayment required in Chapter 13. Third, the Contracts Clause does not apply to the federal government so I know when the exemptions became effective. Finally, and most significantly, I can make a colorable argument that the change in the § 522(d) exemptions are less affected by simultaneity bias at the state level. The change was imposed by the federal government and only affected debtors in those states that allow the use of the § 522(d) exemptions.

The term "quasi-experiment" is chosen as this is not really an experiment. Although not chosen at the state level, the change was still a result of the political process and therefore endogenous. If one thinks that the causes of the change in the federal exemptions are distributed evenly across states, this does not create a problem. Furthermore, I can control for some fixed differences through the use of fixed state effects and fixed state trends.

It is true that the states are free to opt out of the federal exemptions at any time and therefore must have in some sense "chosen" the change in the federal exemptions by not opting out after the change. As a practical matter this is less of a problem than it would otherwise appear as no states opted out in response to the changes in the federal exemptions in either 1984 or 1994. Only three states have opted out since 1983: California (1984), South Carolina (1990) and Mississippi (1991). While California did opt out at about the same time that the federal exemptions were changed, it enacted

exemptions that were substantially identical to the federal exemptions.[150]

More serious are the possibilities that the federal government considered only the effect the exemptions would have on those states that did not opt out or that only interest groups in those states that allow the use of the § 522(d) exemptions would lobby over the choice of the federal exemptions. Because the federal exemptions may serve as a standard for the states to follow, I argue that other groups would still have an interest in the size of the federal exemptions.

This "experiment" was not controlled as there were other significant changes in 1994. In 1994 Congress changed the lien avoidance provisions of § 522(f). However, there does not seem to be a compelling argument of why these changes would affect those states that allow the federal exemptions differently than those states that do not. Legal changes occurred at the state level as well; several states changed their exemptions policies in the years surrounding the change in the § 522(d) exemptions. If a state changed its exemptions between 1990 and 1996, I exclude it from the data-set.[151] I am left with 32 states and the District of Columbia observed over seven years.

Although White (1991) proposed, but did not conduct, a similar test using the 1984 change in the § 522(d) exemptions, I focus on the 1994 change for three reasons.

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[150]In response to a court decision allowing "stacking," California opted out of the federal exemptions and enacted an alternative system of exemptions almost identical to the then existing federal exemptions. The only change was that stacking was explicitly prohibited. The same change was made to the federal exemptions a few months later.

[151]AK, AR, CA, CO, CT, ID, ME, MN, MS, NV, NH, NM, NC, SC, OR and WV were excluded as they had a significant change in their exemptions between 1990 and 1996. In addition, IN and LA were excluded as they do not report divorce statistics.

First, in 1984 the change in the exemptions was less clear. In 1984 Congress eliminated stacking, reduced the spillover provision and placed an aggregate limit on the exemption of personal property. In 1994 Congress doubled the exemptions. Second, the change in the § 522(d) exemptions in 1984 was accompanied by more significant legal changes than the 1994 change. As mentioned above, in 1984 Congress created the "substantial abuse" and "disposable income" tests. In 1994 the most significant change to the bankruptcy code (at least with respect to consumer finance) was to the lien avoidance provision. I argue that this change was less significant than the changes in 1984. Finally, and most significantly, the years surrounding the 1984 change contained more changes in state exemptions making it harder to focus exclusively on the change in the § 522(d) exemptions.

A. Graphical Analysis

As the section merely asks whether a state allows its debtors to use the § 522(d) exemptions, it lends itself to a graphical presentation. I focus on two sets of states that have not changed their state exemptions since 1990. First I focus on six states in the broader Mid-Atlantic region and the District of Columbia. New Jersey, Pennsylvania and the District of Columbia all allow the debtor to use the § 522(d) exemptions and none provide significant other exemptions. Delaware, Maryland, New York, and Virginia all prohibit their debtors from using the § 522(d) exemptions. Likewise, I examine four states in the Midwest that have not significantly altered their state exemptions since 1990. Michigan allows its debtors to choose the § 522(d) exemptions and does not provide other significant exemptions. Illinois, Indiana and

Ohio have all opted out of the § 522(d) exemptions.

Figures 1 and 2 graph the filing rates in the Mid-Atlantic states that have opted out (O) relative to those that still allow the use of the federal § 522(d) exemptions (F). Figure 1 presents the difference and ratio in their average total filing rates over time while Figure 2 does the same for their Chapter 7 filing rates. Figures 3 and 4 provide the same analysis for the Midwestern states. None of these graphs present evidence that the exemptions lead to higher bankruptcy filings. In fact, it appears that after the § 522(d) exemptions were doubled at the end of 1994 the filing rate in those states that permit the use of the § 522(d) exemptions *fell* relative to the filing rate in those states that opted out.

Figures 5 and 6 graph the difference in the proportion of bankrupt debtors who choose Chapter 7 in those states that have opted out relative to those that have not. The figures do not support the hypothesis that larger exemptions should lead more debtors to choose Chapter 7. After 1994 there is no strong increase in the proportion of bankrupt debtors who choose Chapter 7 in those states that allow the § 522(d) exemptions relative to those that do not.

B. Regressions

The above graphs attempt to control for other factors that affect the filing decision by grouping states with others in the same geographic area. In this section I present the results of both a linear probability model with robust standard errors and a grouped probit model. As in Section IV, I control for unemployment, divorce, income, and poverty and include fixed year and state effects. Some regressions contain state

specific trends as well.

A change in the § 522(d) exemptions is less likely to have an impact in a state that has exemptions more generous than the § 522(d) exemptions as the debtors will simply choose the more generous state exemptions. I therefore construct three alternative variables for those states likely to be affected by the change in the § 522(d) exemptions. **Fed1** takes a value of one if the state allows the use of the § 522(d) exemption in every year in the time period and the year is 1995 or 1996; the change in the exemptions has occurred. **Fed1** takes a value of one in 11 of the 33 areas.[152] **Fed2** takes a value of one in 1995 and 1996 if the § 522(d) exemptions are available and more valuable than the state exemptions for a single debtor with no home. Only Texas differs from **Fed1**. Finally, using **eihc**, I compare the § 522(d) exemptions to state exemptions from the standpoint of a married individual with a home. **Fed3** takes a value of one only in five states.[153]

In order to allow the change to have different effects in 1995 and 1996, **Fed195** takes a value of one if **Fed1** takes a value of one and the year is 1995. **Fed196**, **Fed295**, **Fed296**, **Fed395** and **Fed396** are defined similarly.

C. Results

Tables V.FT, V.F7 and V.C present the results. Again I err on the side of including too many specifications. For comparison, Table V.1 presents results when only the state and year dummies are included. Note that these variables again explain

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[152]DC, HI, MA, MI, NJ, PA, RI, TX, VT, WA, and WI
[153]DC, MI, PA, NJ and RI.

the vast majority of the variation in the dependent variable.

1. Filing Rate

Tables V.FT and V.F7 provide moderate support for the proposition that larger exemptions lead to a higher filing rate. This support is stronger if the general probit model is used than if the linear probability model is used and is stronger if no state specific trend is used. As expected, the results are more supportive if one focuses on states which have exemptions substantially smaller than the federal exemptions (**Fed2, Fed3)** as it is more likely that a bankrupt debtor would choose the § 522(d) exemptions. This support is far from overwhelming, particularly in light of the graphical analysis and the regressions with unique state trends. Moreover, while the magnitude of the predicted effect is not practically insignificant, it is not shocking. The linear probability models imply that the increase in the § 522(d) exemptions caused approximately one or two additional individuals per ten thousand to file for bankruptcy. Over this period the average filing rate for those states that allow the use of the § 522(d) exemptions was approximately fifteen per ten thousand.

2. Choice of Chapter

The results presented in Table V.C do not provide additional support for the theory that larger exemptions should lead more bankrupt debtors to choose Chapter 7. In fact, no specification tried yields the statistically significant and positive coefficient predicted by the hypothesis. This may be a result of the remaining empirical difficulties or of the failure of the hypothesis for the reasons given above.

IV. Conclusion and Implications for Future Research

This chapter readdressed two questions from the existing literature on exemptions: 1) do more generous exemptions lead more debtors to file for bankruptcy? and 2) do more generous exemptions lead more bankrupt debtors to choose Chapter 7 over Chapter 13? The results of this paper provide evidence, albeit tentative, that the answer to the first question may be yes. The cross-sectional analysis verifies the results of the previous literature; the results depend critically on the specification used and do not seem to support this hypothesis. The panel and quasi-experiment results provide support for the hypothesis that more generous exemptions lead to higher filing rates. However, the evidence is not overwhelming and, in light of the graphical analysis of Section V, reasonable minds may still disagree as to whether the Simple Hypothesis is true.

Although the choice of chapter received less attention in this Chapter, the analysis does require some remarks. The cross-sectional analysis provided some support for the proposition that larger exemptions available to homeowners lead to a greater propensity of debtors to choose Chapter 7. Contrary to the Simple Hypothesis, however, this proposition was not reinforced by the use of cross-section and time series variation.

Obviously much research remains to be done in the area of consumer bankruptcy. This paper included no explicit model of the choice of exemptions and therefore could not control for simultaneity bias directly. Second, I was unable to control for the amount of debt held by individuals or the supply of credit. This might

be possible by using multiple years of the Survey of Consumer Finance and matching them against samples of debtors who have filed. Unfortunately, this data is only publicly available for 1983.

The failure to establish a positive answer to the two questions remains a puzzle. However, the importance of this puzzle should not be overstated as it is unclear how its resolution should affect the policy debate. If the exemptions do have an effect on the filing rate, then one must still answer whether this effect is beneficial or harmful. If the exemptions have no effect, those supporting large exemptions must answer who, other than those with very large asset holdings, is protected by the large exemptions. The continued puzzle may represent ammunition to be used by sociologists against the model of homo economicus. However, Section I shows that economists may even admit no link between the exemptions and the filing decision without admitting that debtors do not behave in a rational, utility-maximizing manner.

CHAPTER 3: EXEMPTIONS AND THE MORTGAGE LOAN MARKET [154]

Personal bankruptcy is no longer an unusual phenomenon. Personal bankruptcy filings have risen over 500% in the last two decades and there were over 1 million filings in 1996 alone.[155] Moreover, these filing statistics may in fact understate the importance of personal bankruptcy as many more debtors may implicitly use the threat of filing to evade collection efforts by their creditors; it is default and not necessarily bankruptcy which creates losses for creditors (see White and Petropolous (1996)).

The possibility that these changes in bankruptcy patterns may affect the larger market for credit is of obvious importance to economists and the general public. Yet, to date there has been surprisingly little research in this area. In one recent exception, Gropp, Scholz and White (1997) used the 1983 Survey of Consumer Finance to test the question of whether differences in state bank exemption levels affect aggregate household credit.

Aggregate household credit, though, contains both secured and unsecured credit which have very different dispositions in bankruptcy. As a result, the effects of bankruptcy on aggregate credit may obscure important differences in the underlying components of household credit. In this paper, we argue that much of the conventional wisdom regarding bankruptcy does not apply to secured credit. In particular, we focus on the primary market for household credit -- the market for mortgage loans.

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[154]This Chapter is the result of a joint effort with Jeremy Berkowitz of the Federal Reserve Board of Governors.

[155]Taken from the Administrative Office of the U.S. Courts, *Annual Report of the Director* 1996.

Mortgage loans are (nearly always) fully secured by collateral and are often protected by mortgage insurance. Over 97% of the secured claims of Savings and Loans and private mortgage companies on bankrupt debtors are fully secured (Sullivan, Warren and Westbrook (1989).[156] Unlike credit card companies or other unsecured lenders, the mortgage lender *always* has legal remedies, namely the right to repossess. Mortgage debt is senior to bankruptcy exemptions with respect to the home.

In addition to approximating secured credit, mortgage debt plays a central role in the portfolio of many households. Home mortgage loans represented 68% of the liabilities of households in 1995.[157] Mortgage loans are also prominent in bankruptcy; in a sample studied by Sullivan, Warren and Westbrook (1989), 53% of bankrupt debtors were homeowners (compared with approximately 64% of all individuals in 1990) and, in this group, mortgage loans constitute more than half of their debts.

In addition, we emphasize that the institutional and legal realities of personal bankruptcy are not consistent with the hypothesis that generous bankruptcy provisions increase the demand for credit and encourage bankruptcy. We detail several legal obstacles which work to prevent debtors from intentionally building-up unsecured debts prior to bankruptcy. As a result, we stress that to the extent that bankruptcy laws influence credit markets, they operate primarily through the supply of credit.

We stress that because of the role of the home as collateral and the existence of

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[156]As a consequence, while losses on personal loans amounted to about 2% of total, losses on second mortgages were only 0.19% in 1992 (*Installment Credit Report* (1992)).

[157]See Kennickell, Starr-McCluer and Sunden (1997).

several legal protections provided to the home mortgage lender in bankruptcy, the homestead exemptions are unlikely to adversely affect the mortgage credit market. In addition, it is possible that the home mortgage lender may gain from these exemptions and bankruptcy. Put simply, it may be that many debtors file for bankruptcy precisely so that they can *pay* their mortgage and keep their home by discharging other debt.[158]

Our empirical investigation makes use of both time series and cross-sectional variation. The Home Mortgage Discrimination Act (HMDA) dataset and the Federal Housing Finance Board's *Rates and Terms on Conventional Home Mortgages* provide cross-sectional data over several years. To our knowledge, this paper is the first to use these large high-quality data sets to study the effects of bankruptcy.

The remainder of the paper proceeds as follows. Section I provides a brief outline of the relevant empirical evidence. Section II discusses some aspects of the legal structure of the credit market and why it is so difficult to construct an empirical test. Section III presents a framework for examining the effects of property exemptions on the mortgage market. Section IV reports empirical estimates of the importance of exemption levels on the market for housing credit. Section V concludes.

I. Existing Literature

Although bankruptcy is governed by federal law, the states are permitted to set their own exemption policies and have been kind to empirical economists by enacting

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[158]Sullivan, Warren and Westbrook (1989) report that 10% of homeowners in bankruptcy do not even report their mortgages to the court. They estimate that 40% of debtors in bankruptcy reaffirm some form of debt. Because of the personal value placed on the home, the home mortgage is a frequent choice for reaffirmation.

what seems to be wildly different exemption policies.[159] Several authors have tested the hypotheses that, by making bankruptcy more attractive, large exemptions should lead to an increase in the filing rate.[160] White (1987) found a positive relationship between the size of a state's exemption and the number of filings that was statistically significant, but weak. Many other scholars found either no statistically significant relationship or even a negative relationship between the generosity of a state's exemption and the number of filings (e.g., Peterson and Aoki (1984), Shiers and Williamson (1987) and Buckley and Brinig (1996)). In Chapter 2 I found that while this ambiguity is not resolved by examining panel-data or the quasi-experiment created by the change in the federal exemptions in 1994, this use of panel data provides more support for the hypothesis than does the cross-sectional analysis.

A recent article by Gropp, Scholz and White (1997) (GSW) uses the 1983 Survey of Consumer Finance to test the broader question of whether differences in states' bankruptcy exemption levels affect aggregate household credit (both secured and unsecured). They found that exemption changes were having a significant effect (see Domowitz and Eovaldi (1993) for opposing arguments). Specifically, GSW found that, when controlling for other factors, relatively large state bankruptcy exemptions

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[159]For example, a bankrupt debtor in Maryland may only use a $5,500 wildcard exemption to try to keep both his car and his house under Chapter 7. In Texas, a bankrupt debtor may exempt his home regardless of its value as long as it is on a lot of less than one acre (less than 200 acres if outside a municipality) and could potentially exempt automobiles worth $60,000. Exemptions cover objects as diverse as a leased organ (Delaware) to dead bodies (Rhode Island).

[160]These studies did not address the fact that the exemptions have legal significance both in and out of bankruptcy. We argue below that, despite this oversight, the hypothesis may still be valid.

are associated with 1) higher probabilities of being denied credit; 2) high total borrowing for households in the top half of the asset distribution; 3) low total borrowing for households in the bottom quartile of the asset distribution; and 4) higher interest rates on automobile loans for low-asset households. Clearly, the GSW paper raises some very important questions.

The results for low asset debtors are consistent with previous theoretical work on exemptions (e.g., Shiers and Williamson (1987)) but present at least one empirical puzzle. GSW assert that the exemptions cause an increase in the demand for credit and a reduction in the supply of credit and that the supply shift may dominate for the low asset debtors while the demand shift dominated for the high asset debtors.

However, that GSW find effects at all for low asset debtors is surprising. By their definition, low asset debtors have less than $7,885 in assets. Given their estimate of the aggregate exemption level, which combines the homestead and non-homestead exemptions, these debtors should be able to exempt all of their assets in all but four states. Thus, nearly all of the variation in exemption levels is irrelevant to low asset debtors and their creditors.

More importantly, GSW study the effect of different exemption levels on the probability of being denied credit regardless of whether the credit is secured or unsecured. The Survey of Consumer Finance asks whether the debtor has been denied credit, not whether this credit was secured or unsecured (see Avery, Ellihausen and

Kennickell (1988)).[161] Similarly, the quantity of credit and interest rate variables which they examine also aggregate these two kinds of credit.[162] This assumption is justified by the debtor's ability to "arbitrage assets and debts across categories." The authors suggest that debtors could borrow on their credit cards or obtain a new consumer loan in order to reduce their mortgage. As detailed below, this kind of strategy is risky. Moreover, the possibility of using this strategy prejudices the creditor in favor of secured rather than unsecured loans. A successful execution of the strategy results in the mortgage holder getting paid, while the unsecured creditor bears the loss.

Secured debt and, in particular, mortgage debt is granted very different legal treatment than unsecured debt in bankruptcy. Aggregating these two forms of credit may obscure differential responses to the prospect of bankruptcy. This paper focuses on home mortgages; the effect on unsecured loans is left to future work. In the next section, we provide detailed background on the treatment of mortgage and unsecured debt in bankruptcy.

II. The Confusing Law of Property Exemptions

This paper considers both the (federal) Section 522(d) bankruptcy exemptions

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[161]This may explain the differential results for low asset and high asset debtors found by GSW. Low asset debtors may be more likely to require unsecured credit than high asset debtors. Since bankruptcy exemptions are less likely to affect secured credit (whose collateral can always be repossessed) than unsecured credit, high asset debtors appear unhindered by relatively high exemption levels.

[162]GSW use interest rates from auto loans. Because these loans are often undersecured in bankruptcy, their interest rate measure reflects both secured and unsecured credit components.

and state property exemptions.[163] If a debtor files under Chapter 7, he will be entitled to exempt the *equity* in his assets up to the value specified in the exemptions. The exemptions may also have significance in Chapter 13 through the "best interests of the creditors" test which states that the creditors are entitled to receive at least as much in Chapter 13 as they would have received in Chapter 7 (Section 1325(a)(4) of the Federal Bankruptcy Code).

A. What are the characteristics of property exemptions?

Empirical investigations would be much easier if the variation between state property exemption was based solely on generosity; for example if all states enacted exemptions which allowed the debtor to choose the form of exempt property. Almost half of the states do provide a "wildcard" exemption which allows a debtor to choose at least some of his exemption and some states have "spillover" provisions in their homestead exemption which allows a debtor without a home to use some of the homestead exemption for other purposes.[164] However, even in these states the "wildcard" or "spillover" exemptions are but one of many exemptions available to the debtor.

The homestead exemption is typically the most generous property exemption in a state and certainly the most significant exemption for this paper. A homestead exemption allows a debtor to exempt the equity in his home.

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[163]In bankruptcy the debtor may choose either state property exemptions or the § 522(d) exemptions unless his state has "opted out" of the § 522(d) exemptions.
[164]A "wildcard" exemption is available in 24 states and the District of Columbia. However, in 18 of these states the exemption is below $1,000.

Despite popular belief, no homestead exemption is truly "unlimited." Those that do not contain a dollar limit contain a limit on the lot size. Although some of these limits are quite large for rural areas, it is quite easy to imagine that the limitation becomes binding for wealthier debtors in towns, cities or villages. For example, in Arkansas a debtor claiming an exemption in a city, town or village can obtain an unlimited exemption only if his homestead is under 1/4 of an acre. If the homestead is between 1/4 and 1 acre, the homestead exemption is limited to $2,500. No homestead may exceed 1 acre in a city, town or village. Apparently those debtors owning more than 1 acre in the town must choose the second option of up to $1,250 if married; an amount which is not scandalously large. Of course, a home on 1/4 of an acre may still be worth quite a bit and many of the homestead exemptions, including those with a specific dollar limit, are so valuable relative to the assets of the debtor as to be effectively unlimited. A home is an excellent store of wealth and the debt may be fungible by paying down the mortgage, however, even this strategy has its limits.

Even when a state places a limit on the amount of equity that a debtor may exempt, that limit often depends on the characteristics of the debtor. For example, some states allow married debtors filing jointly to each claim a homestead exemption while other states do not. Some states, such as Massachusetts, offer substantially increased exemptions for senior citizens while other states such as Utah and Virginia offer exemptions which depend on the number of dependents that a debtor has. Finally, as mentioned above, the exemption may depend critically on whether a debtor lives in a rural or urban area.

When examining personal property exemptions, the first thing that one will notice, even before the generosity of some state's exemption schemes, is that most states offer schemes that are highly specific and complex. A quick glance at the tangible personal property that can be exempted in Texas will illustrate this point. In Texas the debtor may exempt "athletic and sporting equipment, including bicycles; 2 firearms; home furnishings, including family heirlooms; food; clothing; jewelry (not to exceed 25% of total exemption); 1 two-, three- or four-wheeled motor vehicle per member of the family or single adult who holds a driver's license . . .; 2 horses, mules or donkeys and a saddle, blanket and bridle for each; 12 head of cattle, 60 head of other types of livestock; 120 fowl; pets and tools, equipment and books to $30,000 total ($60,000 for head of family).[165] With all of this incredible specificity, the personal property exemption is substantially more difficult to quantify than the homestead exemption.

B. The Pitfalls of Coding the Exemptions

Because of the complications discussed above, one cannot develop a "correct" method of coding property exemptions, a situation reflected by the fact that, to our knowledge, no two papers in this area employ the same method. Indeed, GSW themselves use one measure of exemptions when studying the probability that an individual will be denied credit and a different measure when studying the effect on the quantity of credit and the interest rate. Acknowledging the potential for subjectivity, we employ multiple coding methods to insure that our results are not sensitive to the

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[165]From Elias, Renauer and Leonard (1995).

specification chosen.

The difficulties in coding the exemptions are most severe with the personal property exemptions. As described above, states are highly inconsistent in their treatment of personal property exemptions. Many states place no dollar limit on the amount of some forms of personal property that may be exempted but instead rely on words such as "necessary." Other states group categories of exemptions in unique ways and then provide a cap for the group. Still other states rely very heavily on wildcard exemptions. Therefore, if one takes the fungibility of wealth seriously and ignores the "necessary" limitations, states with no limit on the exemption of clothes or furniture will erroneously be seen as providing "unlimited" bankruptcy exemptions. If one ignores exemptions of specific property and focuses solely on the ability to exempt cash, one will overstate the relative generosity of states that rely heavily on the wildcard exemption. One could specify dollar values for what is "necessary," but this raises serious questions about the source of the values chosen. Indeed, the exemptions may be designed to prevent the store of wealth and make resale difficult.

Another difficulty is that most debtors in financial distress are constrained in the amount that they may exempt by the total amount and type of assets that they have available; they are unable to fully utilize the exemptions as provided by law. There are two reasons for this. First, while creditors may unwittingly lend some money to debtors in financial distress, they are unlikely to grant such debtors unlimited credit. Second, there are several provisions of the bankruptcy code designed to prevent abuse of the system which, although not perfect, probably have a real effect on the ability of a

debtor to "plan" for bankruptcy. Many debtors do "plan" for bankruptcy, however, the provisions we discuss below prevent a debtor from accumulating enough assets to maximize the exemptions and prevent a debtor from converting all of the assets that he does have into exempt form.

Although many debtors probably borrow some money from unsecured creditors to accumulate more exempt assets, this strategy is limited both by law and by the creditors' right to say no; we focus on the legal restrictions. If the court finds behavior which suggests that the debtor has borrowed with no intention of ever repaying, the courts may deny his or her bankruptcy petition on the grounds that it was fraudulent (Section 727) or a "substantial abuse" (Section 707(b)) of the system. Charging one's credit cards to the limit to obtain exempt assets is not necessarily a wise strategy either as debts incurred when there is no possibility to repay are non-dischargeable. Some credit card companies make use of this provision by routinely examining the bankruptcy filings of their debtors to determine the date of insolvency. They then challenge all debts incurred after this date (Elias, Renauer and Leonard (1995)). When they do challenge a debt, the banks have a fairly high success rate, between 38% and 48% (Installment Credit Report (1992)).

Both the provisions of the code that are designed to prevent "abuse" of the bankruptcy process and the design of the exemptions themselves work to prevent many debtors from reaching the dollar limit of each form of exempt property. That is, many exemptions explicitly give judges discretion over what the debtor is entitled to keep in order to prevent the debtor from using exempt property as a store of wealth. For

example, exemptions which relate to common forms of personal property generally require that the exempt property be "reasonably necessary" for the debtor's livelihood or that the property be for the actual use of the debtor.[166]

Further, the ability of a debtor to engage in pre-bankruptcy planning, even if it is just to convert non-exempt wealth to exempt form, is limited by the existence of very fact-specific rulings that seem to defy concise summarization.[167] Even when the state exemption does not contain explicit language requiring that the exempt property be necessary for the debtor or his family, a debtor's attempt to use the bankruptcy exemptions to store wealth in assets that are highly liquid can still result in a denial of the exemption or even a denial of the discharge if the court feels that this was indicative of an attempt to "hinder, delay or defraud a creditor" (*In re Armstrong*, 97 B.R. 569, 570 (Bankr. Neb. 1989), *aff'd* 931 F.2d 1233, (8th Cir. 1991)).[168]

The vast majority of debtors do not maximize the theoretical exemption.[169] This fact and the fact that many debtors who would apparently gain from these

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[166]In California, the exemption includes personal effects that are "ordinarily and reasonably necessary to, and personally used or procured for use by" the debtor or his family. Further, if an item has "extraordinary value" relative to that deemed necessary, the court can order the item sold and allow the debtor the "reasonable" portion of the proceeds.

[167]A good starting point for the interested reader is King, 14 COLLIER ON BANKRUPTCY § CH.09 at CasHi-25. Perhaps the best summary of the standard used is given by one bankruptcy judge, "When a pig becomes a hog, it is slaughtered." *In re Swift*, 916 F.2d 1056, 1060 (1993).

[168]For related research, see Sieger, Vadner and Watkins (1994).

[169]As of 1981, the median asset value of bankrupt debtors in Illinois, Texas and Pennsylvania was $14,000. In all three of these states, a couple in bankruptcy could have exempted more than this amount in the homestead alone (Sullivan, Warren and Westbrook (1989)).

strategies neither file nor default, appear to suggest that the anti-abuse provisions are to some extent effective.[170] Again, the point is not that pre-bankruptcy planning does not take place.; we only assert that such planning has some limit.

C. Other Consumer Credit Laws and Regulations

It is important to remember that the mortgage creditor retains the right to foreclose if he is not repaid in full; the mortgage is senior to the exemption with respect to the home. Moreover, the mortgage creditor is immune to several bankruptcy provisions which threaten other secured creditors or other lien-holders. For example, unlike other forms of secured credit, the mortgage is not split into secured and unsecured credit components by Section 506 and thus a debtor desiring to retain possession of his home must either convince the mortgage creditor to allow him to reaffirm the debt or pay the mortgage creditor in full. Likewise, the mortgage creditor is not affected by Section 1322(b)(2) which allows the debtor to reschedule payments in Chapter 13 according to a judicially determined interest rate. Finally, the debtor cannot make use of the lien avoidance provisions of section 522(f) for a mortgage contract.

Most states have opted out of the § 522(d) exemptions and many of the others have adopted state exemptions so generous that it appears a debtor is unlikely to choose the federal exemptions for reasons other than administrative convenience. Therefore, it is safe to say that *state* property exemptions are the dominant form of

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[170]White and Petropolous (1996) suggest that as many of one half of all American households could financially gain by filing for bankruptcy.

exemptions in bankruptcy. In addition, these exemptions continue to have significance outside of bankruptcy. Much like their operation in bankruptcy, a general creditor may only seize a debtor's property if the debtor has non-exempt equity in that asset. Again like bankruptcy, the exemptions do not affect the right of a creditor to seize his collateral if he is not repaid in full. Although the exemptions protect the debtor's assets equally whether or not he has filed, their value is enhanced by the discharge available in bankruptcy and the lien avoidance provisions of section 522(f). In the absence of bankruptcy, the debtors assets are only protected so long as they remain in exempt form.[171]

Property exemptions are but one part of debtor creditor law. Just as the exemptions vary across states, there is a fair amount of state-level variation in other aspects of the law which could directly affect the price and quantity of credit. A few examples will illustrate this problem. Until January 1 of 1998, Texas effectively prohibited the grant of a second mortgage on a home through the very same provision that established the homestead exemption. California and Texas prohibit mortgage lenders from seeking recourse against their debtors if foreclosure fails to generate sufficient assets to satisfy the debt. Several other states allow a debtor (or junior creditor) to redeem the home even after it has been sold at an auction. In addition, the states have adopted varying restrictions on the ability of a creditor to garnish his debtor's wages.

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[171]Some exemptions protect the proceeds from a sale of exempt property for a period in order to allow the debtor to convert the proceeds into another form of exempt property. See, for example, HI Rev Stat 36-651-96.

While the above statutes are potentially measurable, they are beyond the scope of this paper. Rather than attempt to specify all legal and cultural variables that might affect the credit market, we rely on the use of cross-sectional and time series variation to control for some of these unmeasured effects.[172]

III. Property Exemptions and Mortgage Credit

In this section, we discuss the possible effects of increases in bankruptcy exemptions on the market for mortgage loans. In discussing bankruptcy exemptions, we distinguish between the homestead exemption and personal property exemptions.

A. Effects on the Demand for Mortgages

For all of the reasons discussed above, we believe that the effect of the exemptions on the demand for mortgages is likely to be limited. Any discussion of the effect on the demand for secured credit must first acknowledge the fact that many debtors simply have no idea what the property exemptions are in their state at the time they enter into their loan contracts.

As with bankruptcy, the vast majority of the literature on secured credit is set in the context of the firm. However, the notion that secured and unsecured credit may serve, to some extent, as substitutes has clearly emerged (e.g., Schwartz (1997)). The degree of substitution will depend on the relative transactions costs of the two forms of credit, the relative ability of the creditors to monitor the debtor's actions and the ability

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[172]If the changes in these laws occurred at roughly the same time as changes in the exemptions, this would bias the results. We did research the changes in garnishment laws and found that there were almost no changes over our time period.

of the unsecured creditors to observe the level of secured credit. For now, we note that it is unlikely that a shift in demand would affect the credit market unless it changed the type of debtor who applied for the loan. In addition, if capital is mobile across states so that supply is flat in any one state, demand shifts will not affect equilibrium terms of credit. Because the HMDA data set provides detailed information on the individuals who apply for the loan, we are able to control for this potential problem to a certain extent.

B. Effect on Supply

To the extent that property exemptions do affect the market for home mortgage loans, we expect the effect to change the supply of mortgages. Our primary conclusion is that, unlike the supply of unsecured credit, the supply of mortgages should not be adversely affected by large homestead exemptions. Additionally, we conclude that it is at least possible that large homestead exemptions will increase the supply of mortgages.

Consider first the case of no transactions costs. The mortgage lender might take a negative view of personal property exemptions. This occurs because, if the mortgage lender cannot fully satisfy her claim by seizing the house, she would like to go after personal property. Large personal property exemptions prevent this. However, the mortgage creditor should be completely indifferent toward the homestead exemption as it will not affect his right to foreclose on the home if not paid in full. While self-evident, we believe that this point has been overlooked in the literature and has important empirical implications.

With potential transactions cost, the situation is different. Specifically, assume

that the home mortgage lender will incur some non-reimbursable costs if there is a sale of the debtor's home. Larger exemptions may induce the debtor to choose to file for bankruptcy and to default on his unsecured loans thereby increasing his wealth. In addition, a larger homestead exemption may reduce the required repayment in a Chapter 13 bankruptcy again leading to a wealth effect. This wealth effect may prevent a default and save the lender the non-reimbursable costs. Larger homestead exemptions may also induce the debtor to choose Chapter 7 over Chapter 13. We argue below that Chapter 7 is likely to pose lower costs for the home mortgage lender. A larger homestead exemption will make it less likely that there will be a foreclosure sale.

Larger personal property exemptions may have a beneficial effect because of the wealth effect. That is, if a debtor reaffirms the mortgage, the mortgage holder benefits from larger exemptions as they make the debtor wealthier and hence better able to continue to meet the payments. However, this must be balanced against the effect on the deficiency judgment and the debtor's incentives to engage in pre-bankruptcy planning; the mortgage creditor may prefer the debtor to have a large homestead exemption and small personal property exemption to encourage him to repay his mortgage before filing for bankruptcy. Therefore, the effect of the personal property exemptions is theoretically uncertain.

To evaluate these potential effects more explicitly, we employ a model in which we first focus on the debtor's choices of whether or not to repay his loans and whether or not to file for bankruptcy. Once this is specified we focus on the return to the

mortgage lender.

1. The Debtor's Decision

Although the majority of papers addressing property exemptions have focused on the filing decision, no clear model of the debtor's filing decision has emerged. While we do not seek to fill this void here, we do need to address the issue in order to examine the effect of the exemptions on the return of the secured creditor. We assume that the debtor will have four general alternatives: repay all of his creditors in full, default on his unsecured loans and force the creditors to use state collections proceedings, file under Chapter 7 or file under Chapter 13 of the bankruptcy code.[173] We assume throughout that the debtor may only keep his home if he repays his mortgage creditor in full; the mortgage creditor will not renegotiate the mortgage.

There are several reasons why the probability of filing for bankruptcy should depend on the exemptions. First, the exemptions may be larger in bankruptcy than in simple default. For example, some states allow filers to use the federal bankruptcy exemptions which may be larger than the state exemptions. In addition, some states, such as California, Delaware and Maryland have state exemptions that apply only in bankruptcy. Additionally, bankruptcy permanently discharges debts and avoids certain liens. As a result, after bankruptcy the debtor is able to convert his exempt wealth into any form he likes without fear of seizure by creditors. He will no longer have to fear

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[173]We do not consider the choice of defaulting on the mortgage and repaying the unsecured loans. Because we assume that the mortgage lender has the right to a deficiency judgment, he has the right to be treated equally as the unsecured creditors.

attachment by general creditors and those liens which were attached before bankruptcy.[174] Rather than trying to be more explicit about the decision to file, we assume that the debtor will file with some probability that depends on: the level of garnishment permitted, the exemptions, the value of his home and the value of his human capital, $b(g, E_h, E_P, h, k)$, where g is the fraction of future income which is exempt from garnishment, h is the value of the house and k is the debtor's human capital (equivalently, future income).[175] Note that some of the anti-abuse provisions of the bankruptcy code may deny the debtor access to bankruptcy. In these circumstances the probability of filing is simply zero.

To simplify notation, throughout the discussion we assume that the personal property exemption is binding, $P>E_P$, where P is personal property. The distressed debtor's exempt personal property is thus always equal to E_P. This assumption has no effect on the model's implications for changes in E_h. However, without this assumption, marginal changes to E_P may have zero effect on the lender.

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[174]Some state exemptions allow attachment of the debtor's property even though they do not allow foreclosure and sale of the property. For example, Section 41.001 of the Texas Property Code only explicitly prohibits the "seizure [of a homestead] for the claims of creditors." This language has resulted in some ambiguity. Some courts have held that no lien can attach the homestead. *Hoffman v. Love*, 494 S.W.2d 591, 593-94 (Tex. Civ. App.-Dallas 1973), *writ ref'd n.r.e. per curiam* 499 S.W.2d (Tex. 1973); *Harms v. Ehlers*, 179 S.W.2d 582, 583 (Tex. Civ. App.-Dallas 1944, writ ref'd). However, other, more recent, cases have found that an unenforceable lien attaches. See *Exocet, Inc. v. Cordes*, 815 S.W.2d 350 (Tex. App.- Austin 1991, no writ.) These liens may, however, "place a cloud on the debtor's title" and thus are avoidable in bankruptcy." *In re Henderson*, 18 F.3d 1305, 1310-11 (5th Cir 1994).

[175]The federal garnishment exemption is the greater of 75% of the debtor's wages or thirty times the minimum wage per week.

a. Default outside Bankruptcy

Consider a debtor who decides not to repay his unsecured creditors but does not file for bankruptcy. His unsecured creditors (including the mortgage creditor if there is a deficiency judgment) will have the right to garnish his wages and seize any non-exempt property in satisfaction of their debt. In order to retain his home, the home equity (plus subjective value) must be worth more than the debt but not so valuable that the equity exceeds E_H. If the equity exceeds E_H, any creditor can demand the excess equity and thereby force a sale of the house. If the value of the home (including the subjective value) is less than the value of the mortgage, a debtor defaulting on his unsecured debt would have no reason to repay his mortgage. In addition, the debtor must be able to repay the mortgage. That is, he will retain his home if $M-v<h<M+E_H$, and $gk+E_P>M$, where v is the subjective value of the home and M is the amount of the mortgage loan. If both conditions hold, his consumption will be $E_P+h-M+v+gk-T_n$ where T_n represents some transactions costs such as the embarrassment associated with answering collections calls and any damage to the debtor's reputation as a good credit risk and an "honest" citizen. If either condition does not hold, the debtor will lose his home and his consumption will be $Min[h-M, E_h]+gk-T_n$.

b. Chapter 7

Now consider a debtor filing under Chapter 7. The mortgage creditor must be repaid in full if the debtor is to retain the home. The debtor may only do so if he has sufficient assets, other than the home, to repay the debt in full, $k+E_P>M$. By filing for bankruptcy the debtor has more wealth available for repayment as he is no longer

subject to garnishment or the other pressures that the unsecured creditors can place on a delinquent debtor. As with simple default, the equity must be enough to make reaffirming the mortgage rational but not so much that it exceeds the exemption, $M-v<h<M+E_h$. If both of these conditions are met, the debtor's consumption is $E_p+h-M+v+k-T_7$ where T_7 represents the debtor's transactions costs in Chapter 7. If one of these conditions is not met, the debtor will lose his home in a Chapter 7 bankruptcy and his utility will be $E_p+Min[E_h, h-M]+k-T_7$.

The transactions costs of Chapter 7 are likely to be much different than those of default outside of bankruptcy and their size is likely to depend on the individual characteristics of the debtor and the community in which he lives. The debtor will have to pay a filing fee and may need to hire a lawyer. In addition, the debtor may face an additional stigma beyond what he would have faced had he simply defaulted. However, the automatic stay will protect the debtor from unwanted collections calls and the anti-discrimination provision of Section 525 may provide some comfort as well. From a theoretical level it is unclear whether filing for bankruptcy appears worse or better on the debtor's credit record than default in the absence of bankruptcy. If a debtor files for Chapter 7 he will be unable to do so again for six years. This has led some scholars to assert that bankrupt debtors are good credit risks.[176] However, a bankruptcy filing may signal a greater willingness to use legal mechanisms to avoid repayment. The

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[176]For example, Frank (1996) reports, "Prof. Warren says some credit-card issuers actually review bankruptcy filings in search of potential customers. Their logic is simple: the law doesn't allow people to file for [a Chapter 7] bankruptcy more than once every six years. Thus, the recently bankrupt are, in some sense, perfect debtors – they can't just walk away from their debts."

threat of other legal mechanisms certainly exists.[177]

c. Chapter 13

The debtor may also file for bankruptcy under Chapter 13. Under Chapter 13 the debtor is permitted to retain all of his property (exempt and non-exempt, real and personal) but must in return pay some of his future earnings. Two important considerations arise. First, the creditors must receive at least as much as they would have received in a Chapter 7 filing. Therefore the debtor must pay at least $(P-E_P)+Max[0, h-M-E_h]$ to his unsecured creditors. Second, the debtor must pay all of his "disposable income." This second provision may be less strict than it would appear. Basically, this provision provides that the debtor's budget may not contain "luxuries unavailable to the average American."[178] We will assume that the additional amount depends on the value of his future earnings, $R_{13}(k, E_h, E_P)$.

As always, the mortgage creditor must be repaid if the debtor is to keep the home. In addition, the unsecured creditors can seize the home if the debtor does not pledge sufficient income to offset any non-exempt equity. Therefore, in order to retain the home the debtor must repay at least $P-E_P+ Max[M, h-E_h]+R_{13}$. If $E_P+ k>Max[M, h-E_h]+R_{13}$ the debtor is able to keep his home and his return is $Min[E_h, h]+v+k-R_{13}-T_{13}$ where T_{13} represents the transactions costs associated with Chapter 13. If $k<Max[M,$

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[177]Less well-known but powerful methods of shielding assets include spendthrift trusts or the doctrine of Tenancy by the Entirety. A brief discussion of these methods can be found in the Legal Introduction.

[178]King, COLLIER ON BANKRUPTCY § 1325.08[4](b) at 1325-53, citing *In re Tinneberg*, 59 B.R. 634 (Bankr. E.D. NY 1986); *In re Hedges*, 68 B.R. 18 (Bankr. E.D. VA. 1986).

$h-E_h$] the debtor will lose the home and receive $Min[E_h, h] + k - R_{13} - T_{13}$.

Depending on the debtor, the transactions cost of Chapter 13 may or may not be greater than the costs of Chapter 7. The debtor will likely have greater legal fees in a Chapter 13 proceeding as the process is longer and more complicated. However, there may be less moral stigma attached to a Chapter 13 filing as there is an effort to repay out of future earnings and presumably a larger payment. One may also assert that a Chapter 13 filing will do less damage to the individual's credit rating. However, at this time most credit agencies do not distinguish between a Chapter 7 and a Chapter 13 filing. In addition, a debtor who has filed under Chapter 13 may file under Chapter 7 without waiting six years.

The foregoing discussion suggests one immediate conclusion. The debtor will always have to make greater payments in Chapter 13 than in Chapter 7. Therefore, assuming that the transactions costs of Chapter 13 are at least as high as Chapter 7, a debtor would only file under Chapter 13 if he would keep his home in Chapter 13 but not in Chapter 7. This occurs when his equity position is above the state's exemption and his future income is high enough to meet the Chapter 13 payments, $h > M + E_h$ and $k > h - E_h - E_P + R_{13}$.

d. Repayment

If the debtor repays his unsecured creditors his return is simply $h+v+k-U-M$. Given the above, it is clear that his filing decision will depend on the value of his home, his human capital, the exemptions, the garnishment limitation and the relative transactions costs. We define $K_D(h, E_h, E_P, g, R_{13})$ as the level of human capital above

which the debtor will repay his creditors in full.

2. The Return to Mortgage Lender

In a world without transactions costs, the size of the homestead exemption would have no effect on the return to the home mortgage lender. The home mortgage lender is senior to the exemption. However, a mortgage creditor is likely to face non-trivial transactions costs when dealing with distressed debtors. We consider three distinct forms of transactions costs. The first are foreclosure costs such as lawyers' fees and running an auction. The creditor is entitled to reimbursement for these costs from the proceeds of the sale and we denote these costs Q_7 when foreclosure occurs in Chapter 7 and Q_n when it occurs outside of bankruptcy. It is likely that $Q_7 < Q_n$. It is true that bankruptcy may delay foreclosure. However, this delay is unlikely to be long and a fully secured mortgage lender is entitled to interest payments.[179] Some have asserted that bankruptcy provides a better system for foreclosure and sale. For example, Lopucki (1991) argues that 1) bankruptcy provides better mechanisms for gaining information on the debtor in order to determine whether to foreclose, 2) makes it easier to prevent abuse of the property, 3) allows for liquidation free and clear of other liens, 4) cuts-off the "right of redemption" (which allows the debtor to make good on the mortgage for up to 6 months), and 5) allows the lender to bypass state anti-deficiency legislation.

The creditor is also likely to face non-reimbursable costs whenever legal

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[179]Elias, Renauer and Leonard (1995) describe delays on the order of an additional month.

proceedings result. In a bankruptcy proceeding the debtor voluntarily surrenders his property making the difficult and risky process of foreclosure unnecessary. In addition, the debtor has an incentive to comply with the legal proceedings in order to secure his discharge. Even in the absence of a foreclosure, these costs within bankruptcy are not likely to be much higher than under state collections proceedings. The debtor has chosen to reaffirm the debt and will make the payments on a regular schedule. Therefore, the mortgage creditor need not participate heavily in the process. In fact, many debtors do not even list their mortgage creditor making their participation completely unnecessary (e.g., Sullivan, Warren, and Westbrook (1989))

Other significant non-reimbursable costs are those associated with continuing a debt contract with a recently distressed debtor. These costs are taken to be inversely proportional to wealth. The costs incurred by the mortgage lender are summarized in the first row of Table 1. Unless the relationship with the debtor is ended through foreclosure, costs are a function of the debtor's wealth.

Rows 2-4 of Table 1 (presented in the Appendix) show the returns to the lender from mortgage payments, foreclosure sales and deficiency judgements (when the debt cannot be covered by sale of the home). The mortgage lender gets a fraction of the debtor's property from a deficiency judgement; the fraction is equal to the housing debt divided by total debt. The bottom row indicates the net return for each possible debtor action, with $F_\gamma(h)$ and $F_n(h)$ denoting the returns from foreclosure and deficiency.

As mentioned above, we allow the debtor's decision to repay all of his debts to depend on the level of garnishment allowed, the exemptions, the value of his home and

the value of his human capital. Full repayment will occur when $k>K_D(g,E_p,E_h,h)$.

Let f(h) and j(k) represent the densities of h and k, respectively. Suppressing the dependence of b on E_p, E_h, g, h, and k for notational simplicity, the mortgage creditor's expected return can be now written as follows:

$$(R) = \int_{h=0}^{M-v} \left(\int_{k=0}^{K_d(E_h,E_p,g,h)} ((b(F_7-C_{7f})+(1-b)(F_n-C_{nf}))j(k)dk + \int_{k=K_d}^{k=K} M-C_r(k-U-M)j(k)) \right) f(h)\ dh$$

$$\left(\int_{k=0}^{M-E_p} (b(F_7-C_{7f})+(1-b)(F_n-C_{nf})j(k)dk + \int_{k=M-E_p}^{(M-E_p)/g} (b(M-C_{7r}(k+E_p-M))+(1-b)(F_n-C_{nf})j(k)dk \right) f($$

$$\int_{h=M-v}^{M+E_h} \left(\int_{k=(M-E_p)/g}^{K_d} (b(M-C_{7r})+(1-b)(M-C_{nr}(gk+E_p-M)))j(k)dk + \int_{k=K_d}^{K} (M-C_r)j(k)dk \right) f(h)\ dh +$$

$$\int_{h=M+E_h}^{H} \left(\int_{k=0}^{h-E_h-E_p} (b(F_7-C_{7f})+(1-b)(F_n-C_{nf}))j(k)dk + \right.$$

$$\left. \int_{h-E_p+R_{13}}^{K_d} (b(M-C_{13}(k+E_p+E_h-h-M-R_{13}))+(1-b)(M-C_{nf}))j(k)dk + \int_{k=K_d}^{K} (M-C_r(k-U))j(k)dk \right) f($$

In order to determine the effect of an increase in the homestead exemption, we need only evaluate the sign of the derivative of the return with respect to E_h. First we make

the following assumptions about the magnitude of relative transactions costs.

Assumption 1

Foreclosure is less costly under court supervision, $C_{7f} < C_{nf}$.

Assumption 2

Reaffirmed mortgages are less costly than foreclosures, $C_{13} < C_{nf}$, $C_{13} < C_{7f}$, $C_{7r} < C_{7f}$ and $C_{nr} < C_{nf}$.

Assumption 3

Mortgage lenders prefer that the debtor file under Chapter 13 and thereby partially discharge the unsecured debt rather than repay the unsecured debt in full, $C_{13} < C_r$. The partial discharge increases the wealth of the debtor and hence his ability to make future mortgage payments.

Assumption 4

Defaulting debtors with non-exempt equity in their home and a relatively high value of human capital are likely to file under Chapter 13 to avoid foreclosure; b(g, E_h, E_P, h, k) is close to one in this region.

Lemma 1

Under assumptions 1-4, the expected mortgage return to the lender is

increasing in the homestead exemption, $\frac{\partial E(R)}{\partial E_h} > 0$.

Proof

See Appendix 1.

Lemma 2

Under assumptions 1-4, the effect of marginal increases in personal property exemptions are theoretically ambiguous. Specifically, they will depend on the relative magnitudes of the beneficial wealth effect on the debtor versus the detrimental effect of the decreased ability to seize the debtor's personal property (deficiency judgements). That is, the sign of cannot be determined *a priori*.

Proof

See Appendix 1.

Lemma 1 immediately suggests that a correlation between homestead exemptions and favorable supply conditions should be empirically detectable. Following Stiglitz and Weiss (1981), Longhofer (1996), and Williamson (1986, 1987), we note that a shift in the supply of credit may manifest itself in reduced credit rationing or lower interest rates. Intuitively, changes to the interest rate may not necessarily clear the market because they have effects on the type of loan and the probability of repayment. For example, higher interest rates will 1) decrease the ability of a given debtor to repay, 2) change the pool of applicants by decreasing the number of high quality applicants, and 3) cause some debtors to engage in riskier behavior. Longhofer (1996) explicitly examines the effect of exemptions on the probability of

denial in a costly state verification model. He shows that if one considers credit generally, larger exemptions should lead to greater credit rationing as the creditors cannot make up for the reduced return in default by increasing the interest rate.

This result is not robust to the inclusion of secured credit. It is unlikely that homestead exemptions will reduce the return to the mortgage lender when the debtor is in financial distress. Therefore, larger homestead exemptions should not lead to higher interest rates and greater credit rationing. If Lemma 1 is correct, larger homestead exemptions should lead to lower interest rates and reduced credit rationing. However, larger personal property exemptions may still raise interest rates and the probability of denial.

IV. Empirical Tests and Results

We first investigate whether the probability of being denied credit, in the form of a mortgage, is increasing in the homestead or personal property exemption level. The Home Mortgage Discrimination Act (HMDA) data contains a summary of every mortgage application taken by qualifying mortgage lenders in the United States from 1990-1995. Because of the enormity of this data set, we select a random subset of approximately 100,000 observations per year. The data include income, race, sex, and state of residence of the applicant and co-applicant (if any) as well as the size of the loan requested and the decision of whether the application was accepted or rejected. This is implemented by estimated a logit model for denial of credit:

$$y_{it}=\alpha_i+\beta_1 E_{h,it}+\beta_2 E_{p,it}+\gamma X_{it}+\varepsilon_{it}, \qquad y_{it}=(0,1),$$

where y_{it} =1 for denied and 0 for approved. X_{it} is a vector of individual characteristics including income, income squared, race, marital status and the state unemployment rate as a proxy for regional business cycle conditions. In addition to these variables, we will include several other state level variables which are likely to be correlated with mortgage terms. All series are annual observations from 1990-1995. The state unemployment rate is taken from the *Selective Access Service* of the Bureau of Labor Statistics.

We do not make the dubious assumption -- implicit in pooled regressions -- that there are no systematic differences in rates or loan-to-value ratios across states, except those related to the regressors. Because states are likely to experience other differential influences (e.g., cultural and legal), we estimate a fixed-effects model which allows the intercept to vary across states (at the cost of a reduction in degrees of freedom).

We assume that the exemption of interest is that available to a debtor who does not qualify for special treatment due to age, infirmity, veteran's status or occupation. Because our analysis predicts that the homestead and personal property exemptions may have very different implications, we construct two measures. First, we construct a measure of the homestead exemption which includes the amount of equity a married debtor may exempt as well as any wildcard exemption which may be used on the home. We ignore any lot size limitations. This measure is relatively straightforward to calculate. In addition, we construct a measure for the personal property exemptions which again includes any wildcard exemption as well as the equity in a car that a debtor

may exempt and the amount of jewels that a debtor may keep other than wedding and engagement rings.[180] Perhaps surprisingly, the two exemptions categories are statistically uncorrelated, with a point estimate of -0.05.

Given this data, we construct both continuous and dummy variables. If a state has an "unlimited" exemption, we set the exemption variable equal to one million dollars in the continuous analysis.[181] We express the continuous variables in units of $100,000. Our second approach, following Gropp, Scholz and White, is to group the exemption levels into quartiles with the fourth quartile containing only those states with unlimited exemptions.

Table 2 presents maximum likelihood estimates based on the continuous specification of the homestead exemption. Columns 2 to 4 show the coefficients, standard errors and p-values allowing for fixed state effects. The coefficients on the fixed state effects are omitted from the table. The fifth column of the table, labeled standardized estimate, reports the coefficient estimate normalized by the variance.

As predicted by Lemma 1, the coefficient on the homestead exemption is significantly negative. The signs of the coefficients on the other variables are consistent with what one would expect. The probability of denial appears to decrease with higher incomes, and increases for higher state unemployment rates and larger loan requests. African-american applicants appear to have a higher probability of denial, as do single applicants. The dummy variable for female applicants should be interpreted with

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[180]Numerous states have unlimited exemptions for wedding and engagement rings.
[181]The results in this paper were not sensitive to alternative ceilings such as two million dollars.

caution as this indicates only that the primary applicant was female. The annual dummies are all significantly different from zero, suggesting that the overall probability of denial changes markedly from year to year.

Table 3 shows the results based on grouping the homestead exemption into quartiles. Again, the quartiles take the expected negative sign implying that larger exemptions lead to a lower probability of denial as the mortgage lenders *prefer* large homestead exemptions.

In Table 4, we include the personal property exemption in addition to the continuous homestead. The coefficient on the homestead exemption is little altered, remaining significantly negative. However, the personal property exemptions are positively and significantly correlated with the probability of denial.

It is of course possible that the negative coefficient on the homestead exemption is a result of a simultaneity bias in the selection of the exemptions in that states with more restrictive credit markets may choose lower exemptions.[182] However, this alone does not explain why the coefficient on the personal property exemptions does not match that of the homestead exemption. Even if the sign is the result of this bias, it is interesting to note that any negative effect that the homestead exemption has on the supply of mortgages is insufficient to overcome the effect of this bias.

We also examine whether, as suggested by our model, large bankruptcy exemptions tend to drive down mortgage rates (presumably by encouraging supply).

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[182]This is related to the claim, made by Peterson and Aoki (1984) and Shiers and Williamson (1987), that states predisposed to high bankruptcy filing rates would choose low exemptions.

We use annual mortgage rates available to borrowers in each of the 50 states and the District of Columbia. These data are taken from *Rates & Terms on Conventional Home Mortgages, 1995* compiled by the Federal Housing Finance Board.

The coefficient estimates from fixed-effects panel regressions are shown in Tables 5. Table 5 reports coefficient estimates from a fixed-effects panel data regression of mortgage rates on the homestead exemption, the personal property exemption, the unemployment rate and average hourly wage rate, annual dummies and the two demographic variables, percentage African-american and percentage senior citizen. Consistent with our hypothesis that supply has increased, the exemption variable enters negatively with a t-statistic of -1.5 or a confidence level of about 87%. An F-test of the joint significance of the random effects indicates a p-value of .00, suggesting strong evidence in favor of differential state effects. In addition, we calculated the Hausman (1978) specification test of random effects model against the alternative of the fixed-effects model. The associated p-value is .522 which indicates no evidence in favor of either model.

The lower panel of Table 5 replicates the analysis for loan-to-value ratios. Although not significant, it is interesting to note that the coefficient on the personal property exemption is -1.1. This is consistent with the estimation of the probability of denial; it is plausible that the personal property exemptions reduce the supply of mortgage loans.

Quite apart from whether bankruptcy exemptions exert a statistically significant effect on credit conditions, are they economically important? Table 6 presents fitted

values from the logit regression for typical debtors in four states. The middle panel shows estimated probabilities of denial for white, married consumers in low, middle and high income brackets and median loan-to-income ratios in 1995.[183]

The bottom panel of Table 6 reports the percentage difference that would be predicted from quadrupling either the homestead or personal property exemption. Clearly, the economic impact from increasing the homestead exemption is small in states with currently small exemptions, a change in the probability of denial of less than 1%. Although slightly larger, the economic impact of quadrupling the personal property exemptions is also quite small.

Turning to mortgage rates, Table 7 shows estimated terms on fixed rate mortgages typical consumers in the same four states. Again the lower panel displays the implied percentage change in the dependent variables that would result from quadrupling either exemption category. As with denial rates, large increases to the homestead exemption imply relatively small changes, well less than 1%, to mortgage rates and down payments. A fourfold increase in personal property exemptions yields mortgage rate and down payment increases in the range of 0.4 to 1.3 percent. While the low value associated with a change in the exemptions may imply that the exemptions have an economically insignificant effect, this result is still important given the predictions and results found in the previous literature. It appears that at least the home mortgage lender is protected.

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[183]Income levels are defined as less than $24,999, between $25,000 and $49,999, and more than $50,000. Each income category contains roughly one third of U.S. families.

V. Conclusion

Existing research into bankruptcy property exemptions has found significant adverse consequences for consumer credit markets, raising interest rates and reducing access to credit. We find that these results do not hold for the homestead exemption and the mortgage loan market. Indeed, the probability of being turned down on a mortgage application appears to be (marginally) lower for residents of states with high homestead exemption levels. The results are reversed if one considers the personal property exemptions.

The discrepancy between the results of our paper and those of the previous research may result from the important differences between secured and unsecured credit. More research is necessary to determine the effects of property exemptions on purely unsecured and undersecured credit. Such research is particularly needed in light of the recent renewed calls for standardized federal bankruptcy exemptions.

The National Bankruptcy Review Commission conducts a periodic review of the bankruptcy process creating the possibility that academic research could lead to significant reform. Despite the apparent need for research on personal bankruptcy, the number of academic papers on this topic is quite limited when compared to the literature on its more seductive cousin, the Chapter 11 reorganization. We hope that this paper, to our knowledge the first to study the effects of personal bankruptcy on mortgages, motivates additional research in this area.

CONCLUSION

Despite the importance of the consumer credit market and the rising incidence of consumer bankruptcy, bankruptcy and debtor-creditor law more generally have received fairly limited attention from economists in the context of the individual. This is due in part to the extremely complicated nature of these laws. Perhaps by necessity, the literature that does address exemptions takes a simplified view of both the credit market and debtor-creditor law. This dissertation re-examines the issue in a slightly richer context by recognizing that there is a major difference between secured and unsecured credit and by stressing two fairly simple elements of the law: 1) exemptions may protect a debtor's assets even if he does not file and 2) the most important forms of secured credit are senior to the exemptions with regard to the collateral.

Chapter One showed that this seniority of the mortgage to the homestead exemption may imply that the debtor and creditor can effectively "waive" a large homestead exemption. This may help explain the lack of robust significant results in the empirical literature and may help explain why credit markets seem to function even in states with "unlimited" exemptions. Finally, this may help explain why creditors and even debtors of moderate means do not expend more efforts lobbying against very large homestead exemptions.

Chapter Two re-examined two questions common in the literature on consumer bankruptcy: 1) do more generous exemptions lead to a higher filing rate and 2) do more generous exemptions lead more bankrupt debtors to choose Chapter 7? By combining both cross-section and time series variation, I was able to find stronger

support for the hypothesis that larger exemptions lead to a higher filing rate than currently exists in the literature. However, this evidence is not as strong as one would expect given the widespread belief in this proposition. I was unable to find any support for the hypothesis that larger exemptions lead more bankrupt debtors to choose Chapter 7. Chapter 2 also shows, however, that an economist can accept these results without rejecting the model of an "opportunistic" debtor. That is, an assumption that debtors maximize utility is insufficient to reach these conclusions; one must make stronger assumptions about the way in which courts apply the law.

Chapter 3, written with Jeremy Berkowitz, focused on the relationship between the exemptions and the home mortgage market. We show that one cannot simply examine the effect of aggregate exemptions on the aggregate credit market. By focusing on the market for home mortgages, we find very different results from a previous paper which treated all credit as one product. In addition, we find that the effect of the homestead exemption on the mortgage creditor differs significantly from the effect of the personal property exemptions. Specifically, the home mortgage lender may dislike lending in states with generous personal property exemptions but seems to prefer to lend in states with generous homestead exemptions. We argue that this result follows from the seniority of the home mortgage with respect to the home. A homestead exemption does not affect the home mortgage lender's right to foreclose and may even offer some advantages to the home mortgage lender in a world of transactions costs.

More work is needed in the area of consumer debtor-creditor law. The

literature lacks an explanation of how the exemptions are chosen; such a model would allow for a better control of potential simultaneity bias. Also missing from the literature is a dynamic model of the debtor's borrowing and repayment decisions which explicitly considers the effects of the exemptions and consumer bankruptcy. Finally, with better data the results of Chapter 2 can be substantially improved. First, one would prefer to examine the relationship between the default rate and the exemptions; I am currently working on this project. Second, one would like to control for the effect of the exemptions on the credit market when examining the debtor's repayment decisions. If more versions of the Survey of Consumer Finance were publicly available, one could presumably match this data against a set of debtors who actually did file and make use of the cross-sectional and time series variation. Hopefully this dissertation will call attention to these deficiencies and lead to future studies.

APPENDIX

Chapter 1

Principal Notation of Chapter 1

H	Value of Consumer's Home	S	Secured Credit; mortgage
x	Consumer's monetary income	D	Unsecured credit
k	Consumer's human capital	DR_D	Total amount owed unsecured
y	x+k	ψ	Total consumption in verification region
q	Verification cost	β	Maximum level of income for verification
ξ_E	Effective Exemption	B	Total Borrowing by Consumer
ξ_S	Statutory exemption	BR_B	Total required repayment if no veification
		z	Limit on pre-bankruptcy planning

Proof of Modified Schwartz Theorem

A consumer wants to borrow an amount B from two risk-neutral creditors. The consumer will have a home worth H and an income, x, with x distributed f(x). The consumer will keep ξ_E for his own consumption in the event of default; ξ_E is the consumers "effective exemption." The consumer will default if his income falls below some amount which itself is a function of the amount borrowed and the exemption, $I(\xi_E,B)$. The creditors know the distribution of x and know the consumer's preferences so that they know $I(\xi_E,B)$. Creditor one must charge an amount outside of default to offset his potential losses from default. Denote the amount distributed to the first

creditor in default as $D_1(x)$. Denote the amount lent by the first creditor as B_1 and assuming an outside opportunity with a rate of return of δ. Therefore,

$$B_1\delta = \int_{x=0}^{x=I(\xi_E,B)} D_1(x)f(x)dx + \int_{x=I(\xi_E,B)}^{x_{max}} B_1R_1f(x)dx$$

and

$$B_2\delta = \int_{x=0}^{x=I(\xi_E,B)} D_2(x)f(x)dx + \int_{x=I(\xi_E,B)}^{x_{max}} B_2R_2f(x)dx$$

Assume that there is a transactions cost of q associated with default. Therefore, $D_1(x)+D_2(x)=H+x-\xi_E-q$. The consumer's total charges outside of default, B*R must be the sum of the charges to the two creditors,

$$B_1R_1+B_2R_2=\left(\frac{1}{1-F(I(\xi_E,B))}\right)\left((B_1+B_2)\delta+\int_0^{I(\xi_E,B)}(D_1(x)+D_2(x))f(x)dx\right)$$

or

$$BR=\left(\frac{1}{1-F(I(\xi_E,B))}\right)\left(B\delta+\int_0^{I(\xi_E,B)}(H+x-q-\xi_E)f(x)dx\right)$$

If ξ_E and B remain constant, a choice of S can only change the distribution between creditors and, by the logic of the original Schwartz Theorem, cannot affect the required total repayment outside of bankruptcy. Therefore, as long as long as ξ_E and B

remain constant, the choice of S is irrelevant. Note that much of this paper will be devoted to the proposition that the choice of S may affect the effective exemption.

Chapter 2

Regression Output

(P values are presented beneath the coefficients)

Table N: Notation

Var.	**Meaning**	**Var.**	**Meaning**
Exemp	Exemption measure used	health	Percent w/o health insurance
gp	Garnishment prohibited	home	% home ownership
metro	% living in metropolitan areas	wealth	% in high asset category
divorce	Divorces per thousand	eqihc2	second "quartile of exemptions
unemp	Unemployment rate	eihcu	"unlimited" exemptions

Table E: Number of States in Each Exemption Quartile

Year	EQOHC1	EQOHC2	EQOHC3	EOHCU	EQOHN1	EQOHN2	EQOHN3	EOHNU
80	16	16	13	6	16	15	12	8
81	12	21	12	6	14	18	11	8
82	9	23	13	6	10	21	12	8
83	12	18	15	6	10	19	14	8
84	12	18	15	6	11	18	15	7
85	15	15	15	6	12	17	15	7
86	15	14	15	7	14	14	15	8
87	15	14	15	7	14	14	15	8
88	16	13	15	7	14	14	15	8
89	16	12	16	7	15	13	15	8
90	16	12	16	7	15	13	15	8
91	16	14	14	7	16	13	14	8
92	16	14	14	7	17	11	15	8
93	15	14	15	7	16	12	15	8
94	15	12	18	6	16	10	18	7
95	16	11	18	6	16	10	18	7
96	18	9	18	6	16	11	17	7
Total	250	250	257	110	242	243	251	131

Year	EQOHW1	EQOHW2	EQOH23	EOHWU	EQOHV1	EQOHV2	EQOHV3	EOHVU
80	14	14	10	13	15	11	9	16
81	13	17	9	12	12	15	9	15
82	9	20	10	12	8	17	9	17
83	7	20	12	12	7	17	11	16
84	9	18	13	11	8	16	12	15
85	11	16	13	11	9	15	12	15
86	11	15	13	12	10	13	13	15
87	12	14	13	12	11	14	11	15
88	13	13	13	12	14	11	11	15
89	14	12	14	11	16	9	12	14
90	16	10	14	11	16	8	13	14
91	16	10	14	11	15	9	13	14
92	15	11	14	11	15	8	14	14
93	15	10	15	11	15	8	14	14
94	17	8	16	10	15	7	15	14
95	17	8	16	10	15	7	15	14
96	16	9	16	10	15	7	15	14
Total	225	225	225	192	216	192	208	251

Table E: Number of States in Each Exemption Quartile; continued

Year	EQONC1	EQONC2	EQONC3	EQONC4	EQONN1	EQONN2	EQONN3	EONNU
80	28	9	9	5	25	14	8	4
81	26	8	8	9	22	13	12	4
82	24	7	8	12	15	15	17	4
83	23	5	10	13	11	20	16	4
84	23	5	10	13	9	23	16	3
85	23	5	10	13	15	18	15	3
86	23	6	13	9	15	18	15	3
87	23	6	12	10	15	17	16	3
88	22	6	12	11	13	16	19	3
89	22	12	6	11	13	16	20	2
90	22	13	8	8	16	14	19	2
91	22	13	8	8	15	14	20	2
92	22	13	7	9	15	15	20	1
93	22	13	7	9	15	14	21	1
94	21	14	7	9	15	19	16	1
95	21	14	8	8	14	18	18	1
96	21	14	8	8	13	21	16	1
Total	388	163	151	165	256	285	284	42

Yr	EQONW1	EQONW2	EQONW3	EONWU	EQONV1	EQONV2	EQONV3	EONVU
80	21	10	9	11	18	11	8	14
81	19	14	8	10	17	12	9	13
82	13	17	12	9	12	14	11	14
83	10	16	16	9	10	14	14	13
84	11	15	17	8	10	14	15	12
85	11	15	18	7	10	17	13	11
86	11	15	18	7	11	17	12	11
87	13	17	14	7	10	18	12	11
88	13	18	13	7	10	17	13	11
89	13	17	16	5	11	16	15	9
90	13	17	16	5	11	15	16	9
91	13	18	15	5	11	16	15	9
92	14	16	16	5	11	15	16	9
93	14	16	16	5	16	11	15	9
94	14	15	17	5	16	10	16	9
95	14	14	18	5	15	11	16	9
96	18	11	17	5	15	11	16	9
Total	235	261	256	115	214	239	232	182

Table E: Number of States in Each Exemption Quartile; continued

Year	EQIHC1	EQIHC2	EQIHC3	EIHCU	EQIHN1	EQIHN2	EQIHN3	EIHNU
80	2	29	14	6	2	28	13	8
81	6	26	13	6	5	26	12	8
82	10	21	14	6	10	20	13	8
83	10	19	16	6	11	18	14	8
84	10	20	15	6	11	18	15	7
85	13	17	15	6	13	16	15	7
86	15	14	15	7	13	15	15	8
87	15	14	15	7	14	14	15	8
88	22	8	14	7	21	8	14	8
89	22	8	14	7	24	5	14	8
90	22	9	13	7	23	7	13	8
91	23	8	13	7	24	6	13	8
92	26	4	14	7	22	7	14	8
93	25	4	15	7	22	7	14	8
94	24	4	17	6	22	5	17	7
95	19	9	17	6	18	9	17	7
96	19	9	17	6	18	9	17	7
Total	283	223	251	110	273	218	245	131

Year	EQIHW1	EQIHW2	EQIH23	EIHWU	EQIHV1	EQIHV2	EQIHV3	EIHVU
80	2	24	12	13	2	25	8	16
81	4	25	10	12	6	23	7	15
82	8	20	11	12	10	17	7	17
83	10	16	13	12	11	15	9	16
84	11	16	13	11	11	14	11	15
85	11	16	13	11	11	15	10	15
86	12	14	13	12	12	14	10	15
87	12	14	13	12	16	12	8	15
88	20	7	12	12	19	9	8	15
89	21	7	12	11	21	8	8	14
90	21	6	13	11	21	7	9	14
91	21	6	13	11	22	5	10	14
92	21	6	13	11	22	6	9	14
93	21	5	14	11	21	6	10	14
94	21	4	16	10	20	6	11	14
95	17	8	16	10	15	12	10	14
96	17	8	16	10	15	13	9	14
Total	250	202	223	192	255	207	154	251

Table E: Number of States in Each Exemption Quartile; continued

Year	EQINC1	EQINC2	EQINC3	EQINC4	EQINN1	EQINN2	EQINN3	EINNU
80	1	2	1	47	2	1	44	4
81	5	6	5	35	7	6	34	4
82	11	10	6	24	17	8	22	4
83	12	13	5	21	18	10	19	4
84	12	13	6	20	18	11	19	3
85	12	13	25	1	18	27	3	3
86	12	13	25	1	18	27	3	3
87	12	13	24	2	17	27	4	3
88	12	13	24	2	19	24	5	3
89	12	13	24	2	20	23	6	2
90	12	13	24	2	20	23	6	2
91	12	19	19	1	23	22	4	2
92	12	30	8	1	21	24	5	1
93	12	30	9		21	24	5	1
94	12	30	9		21	25	4	1
95	12	15	24		22	10	18	1
96	12	15	23	1	23	8	19	1
Total	185	261	261	160	305	300	220	42

Year	EQINW1	EQINW2	EQINW3	EINWU	EQINV1	EQINV2	EQINV3	EINVU
80	2	1	37	11	1	2	34	14
81	7	5	29	10	5	6	27	13
82	15	8	19	9	13	8	16	14
83	15	12	15	9	13	10	15	13
84	15	12	16	8	13	10	16	12
85	15	25	4	7	15	20	5	11
86	15	25	4	7	17	18	5	11
87	16	24	4	7	18	16	6	11
88	19	21	4	7	18	16	6	11
89	19	21	6	5	17	20	5	9
90	20	20	6	5	18	21	3	9
91	22	17	7	5	20	18	4	9
92	20	22	4	5	18	20	4	9
93	21	20	5	5	18	20	4	9
94	20	22	4	5	17	22	3	9
95	19	11	16	5	16	13	13	9
96	18	10	18	5	16	13	13	9
Total	278	276	198	115	253	253	179	182

Table III.FT: Cross Sectional Analysis of the Total Filing Rate

Exemp	none	eihc	eihn	eihw	eihv	einc	einn	einw	einv
Obs	47	47	47	47	47	47	47	47	47
F	6.11	6.72	6.11	5.7	5.33	8.26	5.7	5.59	5.44
Prob > F	0	0	0	0.0001	0.0001	0	0.0001	0.0001	0.0001
R-sq	0.62	0.61	0.62	0.63	0.64	0.66	0.61	0.62	0.62
Root MSE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Exemp		-0.0014	-0.0014	-0.0017	-0.0020	0.1024	-0.0051	-0.0126	-0.0122
		0.33	0.33	0.21	0.12	0.09	0.65	0.25	0.22
gp	-2.2455	-2.0251	-2.0199	-1.9356	-1.9589	-2.5383	-2.0521	-2.0226	-2.1248
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
metro	0.0521	0.0502	0.0501	0.0465	0.0445	0.0684	0.0491	0.0440	0.0441
	0.00	0.01	0.01	0.01	0.01	0.00	0.02	0.04	0.03
divr	0.8832	0.9404	0.9416	0.9845	0.9533	0.9244	0.8896	0.9026	0.8350
	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02
income	-0.0777	-0.0779	-0.0781	-0.0678	-0.0789	-0.1625	-0.0518	-0.0316	-0.0457
	0.28	0.28	0.28	0.35	0.26	0.06	0.65	0.75	0.58
unemp	-0.2070	-0.2162	-0.2164	-0.2276	-0.2523	-0.2686	-0.2147	-0.2351	-0.2636
	0.29	0.27	0.27	0.23	0.18	0.15	0.29	0.25	0.21
health	-0.0194	-0.0022	-0.0017	0.0010	0.0116	-0.0633	0.0108	0.0193	0.0231
	0.86	0.99	0.99	0.99	0.92	0.57	0.95	0.89	0.87
home	0.0276	0.0224	0.0222	0.0231	0.0296	0.0204	0.0195	0.0226	0.0269
	0.59	0.67	0.67	0.65	0.56	0.69	0.64	0.65	0.60
wealth	-0.0410	-0.0324	-0.0321	-0.0140	0.0049	0.0003	-0.0649	-0.0586	-0.0507
	0.32	0.45	0.45	0.76	0.92	1.00	0.30	0.18	0.19
_cons	1.0023	1.0652	1.0819	0.4676	0.7321	3.9730	0.4656	-0.3012	0.5124
	0.84	0.01	0.82	0.92	0.87	0.43	0.94	0.96	0.92

Table III.FT: Cross Sectional Analysis of the Total Filing Rate; Continued

Exemp	none	eihc	eihn	eihw	eihv	einc	einn	einw	einv
Obs	47	47	47	47	47	47	47	47	47
F	7.65	8.25	8.26	7.94	7.68	8.62	6.56	6.59	6.65
Prob > F	0	0	0	0	0	0	0.0001	0.0001	0.0001
R-sq	0.59	0.61	0.61	0.63	0.64	0.63	0.60	0.61	0.61
R o o t MSE	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012	0.0012
Exemp		-0.0018	-0.0018	-0.0020	-0.0021	0.0920	-0.0045	-0.0123	-0.0124
		0.19	0.18	0.10	0.05	0.06	0.03	0.01	0.02
gp	-2.3235	-1.9903	-1.9848	-1.8468	-1.8215	-2.5621	-2.1885	-2.1049	-2.1595
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
metro	0.0446	0.0456	0.0457	0.0417	0.0397	0.0567	0.0458	0.0412	0.0409
	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
divorce	0.8370	0.9403	0.9418	1.0118	1.0029	0.8732	0.8391	0.8698	0.8188
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
income	-0.1011	-0.1001	-0.1002	-0.0709	-0.0702	-0.1347	-0.1059	-0.0834	-0.0904
	0.06	0.07	0.07	0.19	0.19	0.01	0.05	0.11	0.07
unemp	-0.2069	-0.2113	-0.2114	-0.2189	-0.2326	-0.2762	-0.2098	-0.2241	-0.2487
	0.19	0.20	0.20	0.18	0.15	0.08	0.19	0.16	0.12
cons	3.9527	3.5078	3.5081	2.1712	2.4645	4.3575	4.1441	3.4928	4.3394
	0.15	0.23	0.23	0.50	0.41	0.11	0.14	0.21	0.11

Table III.FT: Cross Sectional Analysis of the Total Filing Rate; Continued

Exemp1 **Exemp2** **Exemp3**	**eqihn1** **eqihn2** **eihnu**	**eqinn2** **eqinn3**	**eihn** **eohn**	**eihn** **eohn** **eihnu**	**einn** **eonn**	**eihn** **eihn2** **eihnu**	**einn** **einn2**
Obs	47	47	47	47	47	47	47
F	8.16	9.23	7.13	6.03	5.16	9.69	6.33
Prob > F	0	0	0	0.0001	0.0003	0	0.0001
R-sq	0.65	0.60	0.61	0.62	0.61	0.70	0.61
Root MSE	0.0012	0.0012	0.0012	0.0012	0.0012	0.0011	0.0012
Exemp1	-0.9474	0.3373	-0.0074	-0.0030	-0.0554	-0.0518	0.0478
	0.01	0.60	0.73	0.90	0.22	0.00	0.31
Exemp2	-0.6210	-0.0279	0.0057	0.0029	0.0503	0.0003	-0.0004
	0.35	0.96	0.80	0.89	0.27	0.00	0.26
Exemp3	-1.0974			-0.7855		-62.3446	
	0.09			0.84		0.00	
gp	-2.0738	-2.3206	-1.9351	-1.9431	-2.0415	-2.0134	-2.1597
	0.00	0.00	0.00	0.00	0.00	0.00	0.00
metro	0.0482	0.0464	0.0452	0.0462	0.0412	0.0526	0.0551
	0.00	0.00	0.00	0.00	0.01	0.00	0.00
divorce	0.8241	0.8544	0.9466	0.9526	0.8393	1.0282	0.8752
	0.02	0.05	0.00	0.00	0.00	0.00	0.00
income	-0.1278	-0.1178	-0.0948	-0.0971	-0.0747	-0.0802	-0.1290
	0.16	0.19	0.12	0.12	0.20	0.11	0.02
unemp	-0.2470	-0.2207	-0.2053	-0.2154	-0.1592	-0.2796	-0.2263
	0.08	0.11	0.22	0.00	0.33	0.00	0.00
cons	5.6925	4.4409	3.2310	3.2457	2.7758	3.0167	4.0317
	0.00	0.00	0.00	0.32	0.00	0.26	0.15

Table III.F7: Cross Sectional Analysis of the Chapter 7 Filing Rate

Exemp	none	eihc	eihn	eihw	eihv	einc	einn	einw	einv
Obs	47	47	47	47	47	47	47	47	47
F	17.76	15.48	15.48	15.51	15.11	17.33	34.07	17.4	15.61
Prob > F	0	0	0	0	0	0	0	0	0
R-sq	0.58	0.59	0.59	0.58	0.58	0.60	0.62	0.61	0.61
R o o t MSE	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0006	0.0007	0.0007
Exemp		0.0007	0.0007	0.0005	0.0002	-0.032	-0.007	-0.010	-0.009
		0.34	0.34	0.51	0.73	0.30	0.03	0.09	0.11
gp	-1.60	-1.74	-1.74	-1.71	-1.65	-1.51	-1.38	-1.41	-1.48
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
metro	0.0323	0.0319	0.0319	0.0329	0.0328	0.0282	0.0344	0.0297	0.0298
	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
divorce	0.3710	0.3282	0.3284	0.3319	0.3539	0.3580	0.3755	0.3987	0.3582
	0.02	0.02	0.02	0.02	0.01	0.01	0.00	0.01	0.01
income	-0.0628	-0.0632	-0.0631	-0.0694	-0.0659	-0.0515	-0.0703	-0.0483	-0.0556
	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.02
unemp	-0.071	-0.069	-0.069	-0.068	-0.068	-0.047	-0.075	-0.085	-0.100
	0.40	0.40	0.40	0.42	0.43	0.61	0.36	0.29	0.21
_cons	2.78	2.96	2.96	3.18	2.93	2.66	3.07	2.41	3.06
	0.20	0.15	0.15	0.13	0.16	0.22	0.08	0.25	0.12

Table III.F7: Cross Sectional Analysis of the Chapter 7 Filing Rate; Continued

Exemp1 **Exemp2** **Exemp3**	**eihn** **eihn2** **eihnu**	**einn** **einn2** **einnu**	**eihn** **eohn** **eihnu**	**eihn** **eohn** **eihnu**	**einn** **eonn**	**eqihn2** **eqihn3** **eihnu**	**eqinn2** **eqinn3**
Obs	47	47	47	47	47	47	47
F	14.83	28.33	13.7	12.43	29.92	20.85	14.9
Prob > F	0	0	0	0	0	0	0
R-sq	0.6257	0.624	0.6032	0.592	0.6526	0.6218	0.6529
Root MSE	0.00066	0.00065	0.00068	0.00068	0.00063	0.00066	0.00063
Exemp1	-0.0105	-0.0090	0.0064	-0.0037	-0.0531	-0.4873	-0.6245
	0.09	0.73	0.72	0.81	0.08	0.02	0.01
Exemp2	0.0001	0.0000	-0.0021	0.0046	0.0456	0.1680	-0.5532
	0.01	0.94	0.90	0.77	0.11	0.50	0.25
Exemp3	-19.1882		-1.8242			0.2502	
	0.00		0.17			0.50	
gp	-1.7124	-1.3763	-1.7168	-1.6990	-1.2452	-1.7740	-1.4582
	0.00	0.00	0.00	0.00	0.01	0.00	0.00
metro	0.0353	0.0340	0.0339	0.0315	0.0303	0.0348	0.0281
	0.00	0.00	0.00	0.00	0.00	0.00	0.00
divorce	0.3706	0.3741	0.3461	0.3320	0.3755	0.2429	0.3262
	0.01	0.01	0.01	0.02	0.01	0.09	0.01
income	-0.0562	-0.0694	-0.0641	-0.0590	-0.0424	-0.0857	-0.0399
	0.07	0.03	0.10	0.12	0.22	0.01	0.13
unemp	-0.1021	-0.0742	-0.0873	-0.0639	-0.0292	-0.0862	-0.0497
	0.18	0.38	0.29	0.43	0.71	0.32	0.54
_cons	2.5531	3.0764	2.7652	2.7423	1.8482	4.4546	2.4413
	0.20	0.09	0.25	0.24	0.32	0.06	0.16

Table III.C: Cross Sectional Analysis of the Choice of Chapter

Exemp	**eihc**	**eihn**	**eihw**	**eihv**	**einc**	**einn**	**einw**	**einv**
Obs	51	51	51	51	51	51	51	51
F	2.24	2.15	2.23	2.27	1.97	9.8	2.44	2.19
Prob > F	0.08	0.09	0.08	0.08	0.11	0.00	0.06	0.08
R-Sq	0.21	0.21	0.21	0.22	0.17	0.18	0.16	0.15
Root MSE	0.1422	0.1427	0.1422	0.1416	0.1459	0.1448	0.1471	0.1473
Exemp	0.0002	0.0002	0.0002	0.0002	-0.0037	-0.0010	-0.0005	0.000004
	0.13	0.15	0.12	0.10	0.38	0.10	0.71	1.00
metro	0.0026	0.0026	0.0025	0.0026	0.0024	0.0023	0.0024	0.0025
	0.08	0.09	0.09	0.08	0.12	0.15	0.14	0.15
home	-0.0071	-0.0074	-0.0074	-0.0074	-0.0069	-0.0058	-0.0059	-0.0058
	0.08	0.08	0.08	0.07	0.10	0.19	0.18	0.19
health	-0.0131	-0.0135	-0.0130	-0.0131	-0.0077	-0.0049	-0.0080	-0.0088
	0.10	0.10	0.10	0.09	0.33	0.57	0.32	0.24
_cons	1.1390	1.1631	1.1620	1.1540	1.1136	1.0041	1.0382	1.0301
	0.00	0.01	0.00	0.00	0.01	0.03	0.02	0.03

Exemp1	eihc	eihn	einc	einn	eqihn2	eqinn2
Exemp2	eihc2	eihn2	einc2	einn2	eqihn3	eqinn3
Exemp3	eihcu	eihnu	metro	einnu	eihnu	einnu
Obs	51	51	51	51	51	51
F	4.86	4.83	3.31	12.45	2.12	6.09
Prob > F	0.00	0.00	0.01	0.00	0.07	0.00
R-Sq	0.33	0.35	0.32	0.19	0.31	0.20
Root MSE	0.1343	0.1321	0.1331	0.1477	0.1361	0.1466
Exemp1	0.0043	0.0051	-0.0346	-0.0007	0.0866	-0.0705
	0.00	0.00	0.01	0.88	0.38	0.24
Exemp2	-0.000018	-0.000021	0.0017	-0.000004	0.1781	-0.0824
	0.02	0.01	0.00	0.90	0.01	0.42
Exemp3	2.5200	3.1687		0.0885	0.1584	-0.0778
	0.04	0.02		0.01	0.03	0.24
metro	0.0024	0.0024	0.0034	0.0022	0.0030	0.0024
	0.13	0.13	0.03	0.14	0.07	0.17
home	-0.0030	-0.0026	-0.0053	-0.0060	-0.0014	-0.0076
	0.49	0.53	0.13	0.17	0.77	0.08
health	-0.0176	-0.0188	-0.0129	-0.0048	-0.0178	-0.0085
	0.02	0.01	0.04	0.60	0.02	0.32
_cons	0.8446	0.8159	1.0953	1.0094	0.7588	1.1937
	0.04	0.05	0.00	0.02	0.13	0.00

Table IV.N: Additional Notation

GP	**Grouped Probit Model**	**LP**	**Linear Probability Model**
Trend	**State Specific Trends Included**	**FT**	**Total Filing Rate**
F7	**Chapter 7 Filings**	**F7/FT**	**Chapter 7 as a proportion of Total Filings**

Table IV.1: Only State and Year Effects

Model	GP	GP	GP	GP	GP	GP
Trend	No	No	No	Yes	Yes	Yes
Dependent	FT	F7	F7/FT	F7/FT	FT	F7
Obs	823	823	866	866	823	823
F	119.58	89.73	112.02	195.73	118.1	83.35
Prob > F	0	0	0	0	0	0
R-sq	0.91	0.88	0.90	0.97	0.95	0.93
Adj R sq	0.90	0.87	0.89	0.96	0.94	0.92
Root MSE	0.05861	0.0594	0.14919	0.08817	0.04553	0.04779
Model	LP	LP	LP	LP	LP	LP
Trend	No	No	No	Yes	Yes	Yes
Dependent	FT	F7	F7/FT	F7/FT	FT	F7
Obs	823	823	867	867	823	823
F	155.3	101.59	580.05	245.06	179.79	158.33
Prob > F	0	0	0	0	0	0
R-sq	0.96	0.94	0.97	0.92	0.95	0.93
Root MSE	4454.6	3908.1	0.02834	0.04754	0.41252	0.31972

Table IV.FT.GP: Total Filing Rate, Grouped Probit

Exemp	**none**	**eihc**	**eihn**	**eihw**	**eihv**	**einc**	**einn**	**einw**	**einv**
Trend	N	N	N	N	N	N	N	N	N
Obs	823	823	823	823	823	823	823	823	823
F	194.83	193.1	192.98	192.19	192.2	192.47	196.95	193.07	194.89
Prob > F	0	0	0	0	0	0	0	0	0
R-sq	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj R sq	0.94	0.94	0.94	0.94	0.94	0.94	0.95	0.94	0.95
R o o t MSE	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044
Exemp		0.0002	0.0001	0.0000	0.0000	0.0007	0.0010	0.0006	0.0008
		0.04	0.05	0.31	0.30	0.15	0.00	0.04	0.00
income	0.0071	0.0077	0.0075	0.0076	0.0074	0.0064	0.0077	0.0061	0.0065
	0.28	0.24	0.25	0.25	0.26	0.33	0.23	0.35	0.31
income2	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001
	0.29	0.26	0.27	0.25	0.29	0.36	0.26	0.38	0.37
unemp	0.0746	0.0746	0.0745	0.0743	0.0748	0.0755	0.0749	0.0754	0.0761
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.0022	-0.0022	-0.0022	-0.0022	-0.0022	-0.0023	-0.0022	-0.0022	-0.0023
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.0090	-0.0081	-0.0088	-0.0093	-0.0079	-0.0070	-0.0083	-0.0069	-0.0056
	0.44	0.49	0.45	0.43	0.50	0.55	0.47	0.56	0.63
divorce2	0.0007	0.0007	0.0007	0.0007	0.0007	0.0006	0.0006	0.0006	0.0006
	0.30	0.33	0.32	0.30	0.33	0.39	0.35	0.38	0.43
poverty	0.0125	0.0112	0.0114	0.0125	0.0125	0.0118	0.0122	0.0124	0.0121
	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01
poverty2	-0.0005	-0.0004	-0.0004	-0.0005	-0.0005	-0.0004	-0.0005	-0.0005	-0.0004
	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table IV.FT.GP: Total Filing Rate, Grouped Probit; Continued

Exemp	**none**	**eihc**	**eihn**	**eihw**	**eihv**	**einc**	**einn**	**einw**	**einv**
Trend	Y	Y	Y	Y	Y	Y	Y	Y	Y
Obs	823	823	823	823	823	823	823	823	823
F	179.44	178.97	178.97	178.59	184.99	184.47	185.97	184.69	187.47
Prob > F	0	0	0	0	0	0	0	0	0
R-sq	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj R sq	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Root MSE	0.036	0.036	0.036	0.036	0.035	0.035	0.035	0.035	0.035
exemp		0.00015	0.00014	0.00008	0.00018	0.00217	0.00152	0.0015	0.0015
		0.03	0.03	0.07	0.00	0.00	0.00	0.00	0.00
income	0.0209	0.0207	0.0258	0.0209	0.0241	0.0170	0.0193	0.018	0.019
	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00
income2	-0.0002	-0.0002	-0.0002	-0.0002	-0.0003	-0.0002	-0.0002	-0.0002	-0.0002
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unemp	0.05711	0.05771	0.05756	0.05761	0.05598	0.05889	0.05663	0.0594	0.0591
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.0019	-0.0020	-0.0020	-0.0020	-0.0019	-0.0021	-0.0020	-0.0021	-0.0021
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.0317	-0.0305	-0.0315	-0.0320	-0.0247	-0.0272	-0.0292	-0.0304	-0.0260
	0.04	0.04	0.04	0.03	0.10	0.07	0.05	0.04	0.08
divorce2	0.0016	0.0016	0.0016	0.0016	0.0012	0.0011	0.0012	0.0014	0.0012
	0.12	0.13	0.13	0.13	0.23	0.28	0.23	0.17	0.26
poverty	0.0092	0.0083	0.0086	0.0089	0.0097	0.0085	0.0102	0.0093	0.0083
	0.03	0.05	0.04	0.04	0.02	0.04	0.02	0.03	0.05
poverty2	-0.0003	-0.0002	-0.0003	-0.0003	-0.0003	-0.0002	-0.0003	-0.0003	-0.0002
	0.06	0.09	0.07	0.07	0.05	0.08	0.03	0.06	0.09

Table IV.FT.GP: Total Filing Rate, Grouped Probit; Continued

Exemp1	**eihn**	**einn**	**eihn**	**einn**	**eihn**	**einn**
Exemp2	**eihn2**	**einn2**	**eohn**	**eonn**	**eohn**	**eonn**
Exemp3	**eihnu**	**einnu**	**eihnu**	**einnu**		
Trend	**No**	**No**	**No**	**No**	**No**	**No**
Obs	823	823	823	823	823	823
F	189	191.54	188.22	193.69	190.64	196.56
Prob > F	0	0	0	0	0	0
R-sq	0.95	0.95	0.95	0.95	0.95	0.95
Adj R sq	0.94	0.95	0.94	0.95	0.94	0.95
Root MSE	0.04401	0.04373	0.04409	0.0435	0.0441	0.04347
Exemp1	0.0004	0.00138	0.00055	0.00196	0.00075	0.00195
	0.08	0.01	0.25	0.00	0.09	0.00
Exemp2	-0.000001	-0.000002	-0.00056	-0.00126	-0.00065	-0.00128
	0.04	0.62	0.23	0.00	0.16	0.00
Exemp3	0.21743	-0.01010	0.04718	-0.00171		
	0.01	0.52	0.23	0.90		
income	0.00858	0.00792	0.00694	0.00762	0.00719	0.00758
	0.19	0.22	0.29	0.23	0.27	0.24
income2	-0.00008	-0.00007	-0.00006	-0.00006	-0.00007	-0.00006
	0.21	0.26	0.32	0.30	0.30	0.30
unemp	0.07494	0.07530	0.07483	0.07586	0.07443	0.07583
	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.00223	-0.00223	-0.00221	-0.00227	-0.00218	-0.00227
	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.01037	-0.00661	-0.00817	-0.00394	-0.00769	-0.00405
	0.38	0.57	0.49	0.74	0.51	0.73
divorce2	0.00076	0.00056	0.00066	0.00043	0.00064	0.00043
	0.28	0.42	0.35	0.54	0.36	0.53
poverty	0.01106	0.01224	0.01167	0.01094	0.01157	0.01090
	0.02	0.01	0.01	0.02	0.02	0.02
poverty2	-0.00043	-0.00045	-0.00044	-0.00040	-0.00044	-0.00040
	0.00	0.00	0.00	0.01	0.00	0.01

Table IV.FT.GP: Total Filing Rate, Grouped Probit, Continued

Exemp1	**eihn**	**einn**	**eihn**	**einn**
Exemp2	**eihn2**	**einn2**	**eohn**	**eonn**
Exemp3	**eihnu**	**einnu**	**eihnu**	**einnu**
Trend	**Yes**	**Yes**	**Yes**	**Yes**
Obs	823	823	823	823
F	175.74	186.11	181.88	193.56
Prob > F	0	0	0	0
R-sq	0.97	0.97	0.97	0.97
Adj R sq	0.96	0.97	0.96	0.97
Root MSE	0.03599	0.035	0.03539	0.03434
Exemp1	0.00003	0.00297	0.00215	0.00273
	0.92	0.00	0.00	0.00
Exemp2	0.00000	-0.00002	-0.00217	-0.00298
	1.00	0.00	0.00	0.00
Exemp3	0.03404	0.03695	0.01528	0.04275
	0.81	0.05	0.71	0.02
income	0.02093	0.01831	0.01973	0.02086
	0.00	0.01	0.00	0.00
income2	-0.00024	-0.00022	-0.00023	-0.00024
	0.00	0.00	0.00	0.00
unemp	0.05759	0.05666	0.05732	0.05574
	0.00	0.00	0.00	0.00
unemp2	-0.00196	-0.00201	-0.00197	-0.00199
	0.00	0.00	0.00	0.00
divorce	-0.03099	-0.03029	-0.03405	-0.02287
	0.04	0.04	0.02	0.11
divorce2	0.00157	0.00120	0.00169	0.00092
	0.14	0.24	0.11	0.37
poverty	0.00847	0.00922	0.00859	0.00691
	0.05	0.03	0.04	0.09
poverty2	-0.00025	-0.00027	-0.00024	-0.00018
	0.08	0.05	0.08	0.19

Table IV.FT.GP: Total Filing Rate, Grouped Probit; Continued (Quartiles)

Exemp1	**eqihc2**	**eqihn2**	**eqihw2**	**eqihv2**	**eqinc2**	**eqinn2**	**eqinw2**	**eqinv2**
Exemp2	**eqihc3**	**eqihn3**	**eqihw3**	**eqihv3**	**eqinc3**	**eqinn3**	**eqinw3**	**eqinv3**
Exemp3	**eihcu**	**eihnu**	**eihwu**	**eihvu**	**eqinc4**	**einnu**	**einwu**	**einvu**
Trend	N	N	N	N	N	N	N	N
Obs	823	823	823	823	823	823	823	823
F	188.23	190.28	189.36	190.31	186.93	193.09	188.73	193.11
Prob > F	0	0	0	0	0	0	0	0
R-sq	0.9497	0.9503	0.95	0.9503	0.9494	0.9509	0.9499	0.951
Adj R sq	0.9447	0.9453	0.945	0.9453	0.9443	0.946	0.9448	0.946
Root MSE	0.04409	0.04386	0.04397	0.04386	0.04424	0.04356	0.04404	0.04356
Exemp1	0.0063	0.0146	0.0153	0.0258	-0.0076	0.0130	0.0074	0.0138
	0.30	0.02	0.01	0.00	0.76	0.09	0.31	0.04
Exemp2	0.0107	0.0324	-0.0194	0.0191	0.0024	0.0407	0.0240	0.0349
	0.43	0.01	0.18	0.09	0.92	0.00	0.01	0.00
Exemp3	0.0678	0.0834	-0.0056	0.0377	0.0030	0.0547	0.0236	0.0578
	0.01	0.00	0.75	0.01	0.90	0.00	0.16	0.00
income	0.0078	0.0080	0.0081	0.0060	0.0082	0.0065	0.0067	0.0076
	0.23	0.21	0.21	0.35	0.23	0.31	0.31	0.24
income2	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001
	0.27	0.24	0.24	0.41	0.25	0.33	0.33	0.27
unemp	0.0756	0.0747	0.0747	0.0766	0.0747	0.0751	0.0748	0.0758
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.0023	-0.0022	-0.0022	-0.0023	-0.0022	-0.0023	-0.0022	-0.0023
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.0089	-0.0090	-0.0083	-0.0041	-0.0087	-0.0068	-0.0056	-0.0098
	0.45	0.44	0.48	0.73	0.46	0.56	0.64	0.40
divorce2	0.0007	0.0008	0.0007	0.0005	0.0007	0.0006	0.0005	0.0008
	0.30	0.28	0.30	0.44	0.32	0.43	0.45	0.28
poverty	0.0116	0.0115	0.0125	0.0111	0.0129	0.0113	0.0121	0.0122
	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.01
poverty2	-0.0004	-0.0004	-0.0005	-0.0004	-0.0005	-0.0004	-0.0005	-0.0004
	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00

Table IV.FT.GP: Total Filing Rate, Grouped Probit; Continued (Quartiles)

Exemp1	**eqihc2**	**eqihn2**	**eqihw2**	**eqihv2**	**eqinc2**	**eqinn2**	**eqinw2**	**eqinv2**
Exemp2	**eqihc3**	**eqihn3**	**eqihw3**	**eqihv3**	**eqinc3**	**eqinn3**	**eqinw3**	**eqinv3**
Exemp3	**eihcu**	**eihnu**	**eihwu**	**eihvu**	**eqinc4**	**einnu**	**einwu**	**einvu**
Trend	Y	Y	Y	Y	Y	Y	Y	Y
Obs	823	823	823	823	823	823	823	823
F	176.2	177.37	177.71	189.17	181.68	190.62	184.58	187.44
Prob > F	0	0	0	0	0	0	0	0
R-sq	0.9688	0.969	0.969	0.9708	0.9697	0.9711	0.9701	0.9706
Adj R sq	0.9633	0.9635	0.9636	0.9657	0.9643	0.966	0.9649	0.9654
Root MSE	0.03594	0.03583	0.03579	0.03472	0.03541	0.03459	0.03514	0.03488
Exemp1	0.0065	0.0118	0.0127	0.0343	-0.0449	0.0036	0.0013	-0.0008
	0.26	0.03	0.02	0.00	0.05	0.64	0.86	0.90
Exemp2	-0.0048	0.0223	-0.0079	0.0186	-0.0200	0.0420	0.0371	0.0288
	0.72	0.04	0.55	0.06	0.38	0.00	0.00	0.00
Exemp3	0.0388	0.0641	0.0295	0.1039	0.0004	0.0809	0.0215	0.0766
	0.09	0.00	0.10	0.00	0.99	0.00	0.27	0.00
income	0.0210	0.0207	0.0207	0.0221	0.0213	0.0175	0.0173	0.0187
	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00
income2	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unemp	0.0579	0.0573	0.0576	0.0574	0.0557	0.0557	0.0569	0.0586
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.0020	-0.0019	-0.0020	-0.0020	-0.0019	-0.0020	-0.0020	-0.0021
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.0325	-0.0321	-0.0320	-0.0290	-0.0307	-0.0308	-0.0319	-0.0328
	0.03	0.03	0.03	0.05	0.04	0.03	0.03	0.03
divorce2	0.0017	0.0016	0.0016	0.0013	0.0013	0.0013	0.0014	0.0016
	0.12	0.13	0.13	0.20	0.20	0.20	0.17	0.12
poverty	0.0082	0.0085	0.0092	0.0080	0.0095	0.0089	0.0091	0.0087
	0.06	0.05	0.03	0.05	0.03	0.03	0.03	0.04
poverty2	-0.0002	-0.0002	-0.0003	-0.0002	-0.0003	-0.0002	-0.0003	-0.0002
	0.09	0.07	0.05	0.10	0.04	0.06	0.06	0.07

Table IV.FT.GP: Total Filing Rate, Grouped Probit; Continued (18 Month Lag)

Exemp	eihc	eihn	eihw	eihv	einc	einn	einw	einv
Obs	823	823	823	823	823	823	823	823
F	193.65	193.3	192.83	192	193	196.42	192.42	193.8
Prob > F	0	0	0	0	0	0	0	0
R-sq	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj R sq	0.94	0.94	0.94	0.94	0.94	0.95	0.94	0.94
Root MSE	0.04406	0.0441	0.04415	0.04424	0.04413	0.04376	0.04419	0.04404
Exemp	0.00021	0.00016	-0.00006	0.00001	0.00090	0.00094	0.00036	0.00057
	0.01	0.02	0.07	0.57	0.05	0.00	0.17	0.01
income	0.00820	0.00791	0.00751	0.00731	0.00635	0.00795	0.00667	0.00699
	0.21	0.22	0.25	0.26	0.33	0.22	0.31	0.28
income2	-0.00008	-0.00007	-0.00007	-0.00007	-0.00006	-0.00007	-0.00006	-0.00006
	0.24	0.25	0.26	0.29	0.36	0.25	0.32	0.31
unemp	0.07455	0.07447	0.07426	0.07461	0.07545	0.07422	0.07474	0.07503
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.00220	-0.00219	-0.00220	-0.00220	-0.00224	-0.00216	-0.00221	-0.00221
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.00987	-0.01031	-0.00844	-0.00858	-0.00664	-0.00856	-0.00794	-0.00708
	0.40	0.38	0.47	0.47	0.57	0.46	0.50	0.55
divorce2	0.00075	0.00075	0.00070	0.00071	0.00060	0.00067	0.00068	0.00064
	0.29	0.28	0.32	0.31	0.40	0.33	0.34	0.36
poverty	0.01107	0.01137	0.01254	0.01249	0.01214	0.01313	0.01270	0.01286
	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01
poverty2	-0.00042	-0.00043	-0.00047	-0.00046	-0.00045	-0.00048	-0.00047	-0.00047
	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table IV.FT.LP: Total Filing Rate, Linear Probability

Exemp	**none**	**eihc**	**eihn**	**eihw**	**eihv**	**einc**	**einn**	**einw**	**einv**
Trend	No	No	No	No	No	No	No	No	No
Obs	823	823	823	823	823	823	823	823	823
F	101.63	102.01	101.03	100.54	100.21	104	100.62	100.14	100.07
R-sq	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Rt MSE	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
Exemp		0.0018	0.0018	-0.0006	0.0002	0.0189	0.0092	0.0010	0.0027
		0.01	0.00	0.38	0.69	0.00	0.00	0.81	0.35
income	0.1141	0.1224	0.1201	0.1207	0.1175	0.0852	0.1098	0.1121	0.1128
	0.13	0.11	0.11	0.12	0.12	0.25	0.14	0.15	0.14
income2	-0.0016	-0.0017	-0.0017	-0.0017	-0.0016	-0.0013	-0.0015	-0.0016	-0.0016
	0.03	0.02	0.02	0.02	0.02	0.07	0.03	0.03	0.03
unemp	0.3605	0.3620	0.3603	0.3576	0.3613	0.3837	0.3593	0.3617	0.3649
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.0114	-0.0114	-0.0113	-0.0113	-0.0114	-0.0127	-0.0114	-0.0114	-0.0116
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.0594	-0.0573	-0.0654	-0.0613	-0.0505	0.0140	-0.0431	-0.0544	-0.0405
	0.69	0.70	0.66	0.68	0.73	0.92	0.77	0.71	0.78
divorce2	-0.0051	-0.0052	-0.0052	-0.0050	-0.0055	-0.0091	-0.0064	-0.0054	-0.0060
	0.48	0.48	0.48	0.49	0.45	0.18	0.37	0.46	0.41
poverty	0.1975	0.1840	0.1855	0.1972	0.1983	0.1810	0.1967	0.1978	0.1975
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
poverty2	-0.0081	-0.0077	-0.0078	-0.0081	-0.0081	-0.0075	-0.0080	-0.0081	-0.0080
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Exemp	**none**	**eihc**	**eihn**	**eihw**	**eihv**	**einc**	**einn**	**einw**	**einv**
Trend	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Obs	823	823	823	823	823	823	823	823	823
F	237.94	238.39	235.98	240.56	242.28	238.85	243.53	252.81	257.56
R-sq	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Rt MSE	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34
Exemp		0.00159	0.00116	0.00118	0.00098	0.01210	0.00758	0.01013	0.00860
		0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
income	0.21793	0.21777	0.21591	0.21962	0.24829	0.19312	0.20565	0.19880	0.21190
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
income2	-0.00262	-0.00260	-0.00259	-0.00262	-0.00288	-0.00238	-0.00249	-0.00243	-0.00254
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unemp	0.41278	0.41864	0.41641	0.42136	0.40846	0.42257	0.40899	0.42773	0.42434
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.01601	-0.01621	-0.01611	-0.01636	-0.01602	-0.01687	-0.01609	-0.01696	-0.01673
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.11263	-0.10873	-0.11497	-0.11602	-0.04676	-0.07321	-0.09622	-0.08982	-0.05342
	0.40	0.41	0.39	0.38	0.70	0.57	0.46	0.49	0.67
divorce2	0.01089	0.01083	0.01056	0.01047	0.00734	0.00710	0.00833	0.00834	0.00653
	0.17	0.16	0.17	0.18	0.30	0.37	0.29	0.30	0.40
poverty	0.03695	0.02673	0.03227	0.03337	0.04147	0.03206	0.04051	0.03736	0.03295
	0.25	0.41	0.31	0.29	0.19	0.31	0.20	0.23	0.29
poverty2	-0.00048	-0.00022	-0.00040	-0.00038	-0.00052	-0.00028	-0.00060	-0.00043	-0.00026
	0.66	0.84	0.71	0.72	0.63	0.80	0.58	0.69	0.81

Table IV.FT.LP: Total Filing Rate, Linear Probability; Continued

Exemp1	**eihn**	**einn**	**eihn**	**einn**	**eihn**	**einn**
Exemp2	**eihnu**	**einn2**	**eohn**	**eonn**	**eohn**	**eonn**
Exemp3	**eihn2**	**einnu**	**eihnu**	**einnu**		
Trend	No	No	No	No	No	No
Obs	823	823	823	823	823	823
F	104.75	107.67	98.32	109.78	99.64	103.27
Prob > F	0	0	0	0	0	0
R-sq	0.91	0.91	0.91	0.92	0.91	0.91
Root MSE	0.56	0.55	0.56	0.55	0.56	0.55
Exemp1	0.00203	0.01746	0.00998	0.01753	0.00999	0.01850
	0.42	0.01	0.24	0.00	0.21	0.00
Exemp2	0.24264	-0.00010	-0.00857	-0.01916	-0.00857	-0.01348
	0.62	0.02	0.31	0.00	0.30	0.02
Exemp3	0.00000	0.62440	0.00192	0.63296		
	0.79	0.00	1.00	0.00		
income	0.12098	0.08369	0.11331	0.09688	0.11331	0.11603
	0.11	0.27	0.14	0.19	0.14	0.12
income2	-0.00166	-0.00134	-0.00156	-0.00143	-0.00156	-0.00153
	0.02	0.06	0.03	0.04	0.03	0.03
unemp	0.36079	0.35450	0.35889	0.35543	0.35888	0.36281
	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.01136	-0.01136	-0.01114	-0.01144	-0.01114	-0.01182
	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.06722	-0.05385	-0.05013	-0.01232	-0.05012	0.01672
	0.65	0.71	0.73	0.93	0.73	0.91
divorce2	-0.00515	-0.00661	-0.00578	-0.00807	-0.00578	-0.00886
	0.48	0.36	0.42	0.25	0.42	0.19
poverty	0.18464	0.17863	0.18788	0.16322	0.18787	0.18382
	0.00	0.00	0.00	0.00	0.00	0.00
poverty2	-0.00775	-0.00738	-0.00786	-0.00665	-0.00786	-0.00747
	0.00	0.00	0.00	0.00	0.00	0.00

Table IV.FT.LP: Total Filing Rate, Linear Probability; Continued

Exemp1	**eihn**	**einn**	**eihn**	**einn**	**eihn**	**einn**
Exemp2	**eihn2**	**einn2**	**eohn**	**eonn**	**eohn**	**eonn**
Exemp3	**eihnu**	**einnu**	**eihnu**	**einnu**		
Trend	Yes	Yes	Yes	Yes	Yes	Yes
Obs	823	823	823	823	823	823
F	231.51	243.52	243.76	244.89	246.89	247.11
Prob > F	0	0	0	0	0	0
R-sq	0.97	0.97	0.97	0.97	0.97	0.97
Root MSE	0.34	0.34	0.34	0.34	0.34	0.34
Exemp1	0.00099	0.01878	0.01384	0.01368	0.01347	0.01390
	0.74	0.00	0.00	0.00	0.00	0.00
Exemp2	0.000001	-0.000113	-0.01308	-0.01429	-0.01300	-0.01397
	0.94	0.00	0.00	0.00	0.00	0.00
Exemp3	-0.05389	0.09983	-0.09416	0.05378		
	0.95	0.49	0.82	0.70		
income	0.21604	0.19209	0.20605	0.21407	0.20672	0.21267
	0.00	0.00	0.00	0.00	0.00	0.00
income2	-0.00259	-0.00236	-0.00248	-0.00256	-0.00249	-0.00255
	0.00	0.00	0.00	0.00	0.00	0.00
unemp	0.41651	0.41599	0.41239	0.40821	0.41215	0.41075
	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.01611	-0.01673	-0.01603	-0.01629	-0.01602	-0.01639
	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.11472	-0.09076	-0.13474	-0.05032	-0.13139	-0.04937
	0.39	0.49	0.33	0.69	0.34	0.69
divorce2	0.01054	0.00737	0.01156	0.00631	0.01138	0.00618
	0.18	0.37	0.17	0.41	0.17	0.42
poverty	0.03254	0.03092	0.03104	0.02079	0.03116	0.02072
	0.32	0.33	0.33	0.52	0.33	0.52
poverty2	-0.00041	-0.00026	-0.00029	0.00021	-0.00029	0.00021
	0.71	0.81	0.79	0.85	0.79	0.85

Table IV.FT.LP: Total Filing Rate, Linear Probability; Continued (Quartiles)

Exemp1	**eqihc2**	**eqihn2**	**eqihw2**	**eqihv2**	**eqinc2**	**eqinn2**	**eqinw2**	**eqinv2**
Exemp2	**eqihc3**	**eqihn3**	**eqihw3**	**eqihv3**	**eqinc3**	**eqinn3**	**eqinw3**	**eqinv3**
Exemp3	**eihcu**	**eihnu**	**eihwu**	**eihvu**	**eqinc4**	**einnu**	**einwu**	**einvu**
Trend	N	N	N	N	N	N	N	N
Obs	823	823	823	823	823	823	823	823
F	100.11	100.67	99.44	99.78	104.88	105.07	98.34	96.37
Prob > F	0	0	0	0	0	0	0	0
R-sq	0.9118	0.9129	0.9136	0.9129	0.9139	0.9146	0.9136	0.9129
Root MSE	0.5613	0.55773	0.55541	0.55781	0.55451	0.55233	0.55546	0.55762
Exemp1	0.0781	0.2180	0.2513	0.2595	-0.2510	-0.1725	-0.1652	-0.1010
	0.37	0.02	0.00	0.01	0.28	0.16	0.15	0.39
Exemp2	0.1460	0.3315	-0.2671	0.0745	-0.1242	0.1138	0.1205	0.1344
	0.33	0.01	0.16	0.62	0.60	0.41	0.34	0.30
Exemp3	0.5545	0.7932	-0.2200	0.2776	0.2347	0.6456	-0.3290	0.0857
	0.01	0.00	0.44	0.26	0.33	0.00	0.20	0.67
income	0.1207	0.1194	0.1286	0.0988	0.0638	0.0627	0.1021	0.0930
	0.11	0.12	0.10	0.20	0.40	0.40	0.18	0.22
income2	-0.0016	-0.0016	-0.0017	-0.0014	-0.0010	-0.0011	-0.0014	-0.0014
	0.02	0.02	0.02	0.05	0.15	0.11	0.05	0.06
unemp	0.3686	0.3666	0.3637	0.3788	0.3794	0.3493	0.3623	0.3755
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.0119	-0.0120	-0.0121	-0.0128	-0.0129	-0.0112	-0.0123	-0.0123
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.0604	-0.0474	-0.0456	0.0005	-0.0458	-0.0470	-0.0224	-0.0653
	0.68	0.75	0.76	1.00	0.75	0.74	0.88	0.66
divorce2	-0.0049	-0.0051	-0.0051	-0.0073	-0.0056	-0.0066	-0.0074	-0.0047
	0.50	0.48	0.48	0.30	0.43	0.37	0.30	0.52
poverty	0.1893	0.1829	0.1967	0.1792	0.1950	0.1758	0.2006	0.1934
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
poverty2	-0.0079	-0.0077	-0.0082	-0.0076	-0.0079	-0.0072	-0.0081	-0.0079
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table IV.FT.LP: Total Filing Rate, Linear Probability, Continued

Exemp1	**eqihc2**	**eqihn2**	**eqihw2**	**eqihv2**	**eqinc2**	**eqinn2**	**eqinw2**	**eqinv2**
Exemp2	**eqihc3**	**eqihn3**	**eqihw3**	**eqihv3**	**eqinc3**	**eqinn3**	**eqinw3**	**eqinv3**
Exemp3	**eihcu**	**eihnu**	**eihwu**	**eihvu**	**eqinc4**	**einnu**	**einwu**	**einvu**
Trend	Y	Y	Y	Y	Y	Y	Y	Y
Obs	823	823	823	823	823	823	823	823
F	245.15	244.09	244.45	256.24	244.94	248.69	253.2	258.38
Prob > F	0	0	0	0	0	0	0	0
R-sq	0.9695	0.9697	0.9701	0.9706	0.9697	0.9703	0.9701	0.9704
Root MSE	0.34102	0.34018	0.33793	0.3351	0.34	0.33673	0.33777	0.33613
Exemp1	0.0843	0.1588	0.1684	0.2820	-0.1697	0.0013	-0.0420	-0.0927
	0.17	0.01	0.01	0.00	0.19	0.99	0.54	0.22
Exemp2	-0.1450	0.1646	-0.0497	0.1783	0.0264	0.2626	0.2047	0.1307
	0.28	0.31	0.69	0.20	0.83	0.00	0.01	0.15
Exemp3	0.2035	0.4599	0.3768	0.6055	0.0774	0.3046	0.2346	0.3904
	0.24	0.02	0.00	0.00	0.50	0.02	0.12	0.00
income	0.2185	0.2126	0.2128	0.2209	0.2347	0.1782	0.1851	0.1904
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
income2	-0.0026	-0.0026	-0.0025	-0.0026	-0.0028	-0.0022	-0.0023	-0.0023
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unemp	0.4170	0.4134	0.4184	0.4128	0.4088	0.4052	0.4147	0.4216
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.0164	-0.0162	-0.0165	-0.0166	-0.0158	-0.0166	-0.0168	-0.0168
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.1294	-0.1253	-0.1205	-0.0923	-0.0824	-0.0791	-0.0845	-0.1017
	0.35	0.36	0.38	0.47	0.51	0.54	0.52	0.46
divorce2	0.0116	0.0107	0.0101	0.0086	0.0078	0.0075	0.0083	0.0099
	0.16	0.18	0.20	0.24	0.29	0.33	0.28	0.22
poverty	0.0272	0.0277	0.0355	0.0259	0.0435	0.0281	0.0371	0.0301
	0.39	0.37	0.25	0.41	0.16	0.37	0.24	0.34
poverty2	-0.0003	-0.0002	-0.0005	-0.0001	-0.0007	-0.0001	-0.0004	-0.0002
	0.82	0.82	0.61	0.95	0.51	0.91	0.70	0.83

Table IV.FT.LP: Total Filing Rate, Linear Probability; Continued (18 Month Lag)

Exemp	eihc	eihn	eihw	eihv	einc	einn	einw	einv
Obs	823.00	823.00	823.00	823.00	823.00	823.00	823.00	823.00
F	101.33	100.33	101.79	100.59	108.19	100.35	100.72	100.38
Prob > F	0	0	0	0	0	0	0	0
R-sq	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Root MSE	0.56	0.56	0.56	0.56	0.55	0.56	0.56	0.56
Exemp	0.00153	0.00152	-0.00106	0.00003	0.02214	0.00890	-0.00013	0.00169
	0.02	0.00	0.11	0.95	0.00	0.00	0.97	0.53
income	0.12184	0.12040	0.12244	0.11480	0.08106	0.11298	0.11431	0.11368
	0.11	0.11	0.11	0.13	0.28	0.13	0.14	0.13
income2	-0.00166	-0.00166	-0.00168	-0.00160	-0.00125	-0.00156	-0.00160	-0.00159
	0.02	0.02	0.02	0.03	0.07	0.03	0.03	0.03
unemp	0.36066	0.35936	0.35861	0.36051	0.37827	0.35172	0.36056	0.36062
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.01139	-0.01133	-0.01136	-0.01137	-0.01218	-0.01095	-0.01138	-0.01137
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.06794	-0.07496	-0.04794	-0.05806	0.00322	-0.05280	-0.05989	-0.05116
	0.65	0.62	0.75	0.70	0.98	0.71	0.69	0.73
divorce2	-0.00474	-0.00475	-0.00573	-0.00516	-0.00867	-0.00596	-0.00510	-0.00547
	0.51	0.52	0.43	0.48	0.21	0.41	0.49	0.45
poverty	0.18954	0.18959	0.19600	0.19769	0.19066	0.20470	0.19737	0.19964
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
poverty2	-0.00785	-0.00786	-0.00802	-0.00808	-0.00788	-0.00834	-0.00808	-0.00814
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table IV.F7.GP: Chapter 7 Filing Rate, Grouped Probit

Exemp	**none**	**eihc**	**eihn**	**eihw**	**eihv**	**einc**	**einn**	**einw**	**einv**
Trend	N	N	N	N	N	N	N	N	N
Obs	823	823	823	823	823	823	823	823	823
F	159.63	158.35	158.32	157.52	159.19	158.19	162.7	160.5	161.76
Prob > F	0	0	0	0	0	0	0	0	0
R-sq	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj R sq	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
R o o t MSE	0.04328	0.04317	0.04317	0.04328	0.04306	0.04319	0.04262	0.0429	0.04274
Exemp		0.00017	0.00014	0.00004	0.00008	0.00095	0.00108	0.00100	0.00098
		0.03	0.03	0.26	0.00	0.04	0.00	0.00	0.00
income	0.00085	0.00155	0.00137	0.00025	0.00189	-0.00018	0.00154	-0.00139	-0.00006
	0.90	0.81	0.83	0.97	0.77	0.98	0.81	0.83	0.99
income2	0.00002	0.00001	0.00001	0.00003	0.00002	0.00003	0.00001	0.00004	0.00003
	0.77	0.84	0.83	0.69	0.81	0.63	0.83	0.51	0.61
unemp	0.07893	0.07891	0.07882	0.07918	0.07943	0.08019	0.07921	0.08055	0.08104
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.00248	-0.00247	-0.00246	-0.00248	-0.00248	-0.00255	-0.00248	-0.00255	-0.00258
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.03608	-0.03518	-0.03603	-0.03581	-0.03290	-0.03331	-0.03547	-0.03229	-0.03152
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
divorce2	0.00216	0.00212	0.00214	0.00215	0.00204	0.00200	0.00208	0.00196	0.00194
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
poverty	0.01521	0.01384	0.01409	0.01515	0.01533	0.01447	0.01532	0.01522	0.01485
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
poverty2	-0.00051	-0.00047	-0.00048	-0.00051	-0.00050	-0.00049	-0.00051	-0.00050	-0.00048
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table IV.F7.GP: Chapter 7 Filing Rate, Grouped Probit; Continued

Exemp	**none**	**eihc**	**eihn**	**eihw**	**eihv**	**einc**	**einn**	**einw**	**einv**
Trend	Y	Y	Y	Y	Y	Y	Y	Y	Y
Obs	823	823	823	823	823	823	823	823	823
F	141.74	136.66	136.59	136.66	141.69	138.66	141.21	139.95	141.74
Prob > F	0	0	0	0	0	0	0	0	0
R-sq	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj R sq	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
R o o t MSE	0.0359	0.0365	0.0365	0.0365	0.0359	0.0362	0.0359	0.0361	0.0358
Exemp		0.00013	0.00012	0.00008	0.00018	0.00160	0.00137	0.00131	0.00132
		0.05	0.06	0.05	0.00	0.00	0.00	0.00	0.00
income	0.0194	0.01921	0.01908	0.01938	0.02314	0.01638	0.01758	0.01678	0.01782
	0.01	0.01	0.01	0.01	0.00	0.02	0.01	0.01	0.01
income2	-0.00023	-0.00022	-0.00022	-0.00023	-0.00026	-0.00020	-0.00021	-0.00020	-0.00021
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unemp	0.06116	0.06169	0.06153	0.06170	0.05978	0.06261	0.06094	0.06360	0.06329
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.00201	-0.00203	-0.00202	-0.00204	-0.00199	-0.00214	-0.00204	-0.00215	-0.00214
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.03507	-0.03405	-0.03503	-0.03544	-0.02801	-0.03186	-0.03332	-0.03392	-0.02986
	0.02	0.02	0.02	0.02	0.05	0.03	0.02	0.02	0.04
divorce2	0.00131	0.00127	0.00128	0.00130	0.00093	0.00097	0.00100	0.00115	0.00094
	0.19	0.21	0.20	0.20	0.35	0.33	0.31	0.25	0.34
poverty	0.01015	0.00934	0.00972	0.00990	0.01090	0.00990	0.01145	0.01058	0.00976
	0.02	0.03	0.03	0.02	0.01	0.02	0.01	0.01	0.02
poverty2	-0.00031	-0.00029	-0.00030	-0.00030	-0.00032	-0.00030	-0.00035	-0.00032	-0.00029
	0.03	0.05	0.04	0.04	0.02	0.04	0.01	0.03	0.04

Table IV.F7.GP: Chapter 7 Filing Rate, Grouped Probit

Exemp1	**eihn**	**einn**	**eihn**	**einn**	**eihn einn**	
Exemp2	**eihn2**	**einn2**	**eohn**	**eonn**	**eohn eonn**	
Exemp3	**eihnu**	**einnu**	**eihnu**	**einnu**		
Trend	Yes	Yes	Yes	Yes	Yes	Yes
Obs	823	823	823	823	823	823
F	134.05	141.7	148.29	138.51	139.78	146.21
R-sq	0.96	0.96	0.96	0.96	0.96	0.96
Adj R sq	0.95	0.95	0.96	0.95	0.95	0.96
Root MSE	0.03653	0.03557	0.0348	0.03596	0.03595	0.03518
Exemp1	0.00024	0.00250	0.00244	0.00223	0.00213	0.00267
	0.37	0.00	0.00	0.00	0.00	0.00
Exemp2	0.00000	-0.00001	-0.00301	-0.00216	-0.00213	-0.00245
	0.58	0.00	0.00	0.00	0.00	0.00
Exemp3	0.07150	0.06732	0.07788	-0.02211		
	0.59	0.00	0.00	0.58		
income	0.01902	0.01739	0.01994	0.01732	0.01756	0.01785
	0.01	0.01	0.00	0.01	0.01	0.01
income2	-0.00022	-0.00020	-0.00023	-0.00020	-0.00021	-0.00021
	0.00	0.00	0.00	0.00	0.00	0.00
unemp	0.06143	0.06001	0.05886	0.06146	0.06148	0.06162
	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.00202	-0.00206	-0.00203	-0.00204	-0.00205	-0.00213
	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.03472	-0.03467	-0.02673	-0.03785	-0.03745	-0.02659
	0.02	0.01	0.05	0.01	0.01	0.06
divorce2	0.00126	0.00103	0.00073	0.00136	0.00134	0.00065
	0.21	0.29	0.45	0.17	0.18	0.50
poverty	0.00958	0.01090	0.00843	0.01013	0.01002	0.00862
	0.03	0.01	0.04	0.02	0.02	0.04
poverty2	-0.00030	-0.00033	-0.00024	-0.00031	-0.00030	-0.00025
	0.04	0.02	0.09	0.03	0.03	0.08

Table IV.F7.GP: Chapter 7 Filing Rate, Grouped Probit

Exemp1	**eihn**	**einn**	**eihn**	**einn**	**eihn**	**einn**
Exemp2	**eihn2**	**einn2**	**eohn**	**eonn**	**eohn**	**eonn**
Exemp3	**eihnu**	**einnu**	**eihnu**	**einnu**		
Trend	No	No	No	No	No	No
Obs	823	823	823	823	823	823
F	155.38	159.85	154.98	161.52	157.28	162.05
R-sq	0.94	0.94	0.94	0.94	0.94	0.94
Adj R sq	0.93	0.94	0.93	0.94	0.93	0.94
Root MSE	0.04301	0.04244	0.04306	0.04223	0.04303	0.04243
Exemp1	0.00064	0.00192	0.00119	0.00184	0.00118	0.00192
	0.00	0.00	0.01	0.00	0.01	0.00
Exemp2	0.00000	-0.00001	-0.00109	-0.00149	-0.00108	-0.00111
	0.01	0.02	0.02	0.00	0.02	0.01
Exemp3	0.20962	0.04411	-0.00279	0.04210		
	0.01	0.01	0.94	0.00		
income	0.00297	0.00011	0.00017	0.00042	0.00016	0.00136
	0.64	0.99	0.98	0.95	0.98	0.83
income2	0.00000	0.00003	0.00003	0.00003	0.00003	0.00002
	0.98	0.68	0.66	0.68	0.66	0.75
unemp	0.07895	0.07899	0.07879	0.07935	0.07881	0.08009
	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.00249	-0.00249	-0.00245	-0.00251	-0.00245	-0.00254
	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.03755	-0.03567	-0.03430	-0.03367	-0.03433	-0.03164
	0.00	0.00	0.00	0.00	0.00	0.00
divorce2	0.00220	0.00205	0.00205	0.00198	0.00205	0.00189
	0.00	0.00	0.00	0.00	0.00	0.00
poverty	0.01347	0.01426	0.01457	0.01334	0.01457	0.01422
	0.00	0.00	0.00	0.00	0.00	0.00
poverty2	-0.00046	-0.00047	-0.00050	-0.00043	-0.00050	-0.00047
	0.00	0.00	0.00	0.00	0.00	0.00

Table IV.F7.GP: Chapter 7 Filing Rate, Grouped Probit; Continued

Exemp1	**eqihc2**	**eqihn2**	**eqihw2**	**eqihv2**	**eqinc2**	**eqinn2**	**eqinw2**	**eqinv2**
Exemp2	**eqihc3**	**eqihn3**	**eqihw3**	**eqihv3**	**eqinc3**	**eqinn3**	**eqinw3**	**eqinv3**
Exemp3	**eihcu**	**eihnu**	**eihwu**	**eihvu**	**eqinc4**	**einnu**	**einwu**	**einvu**
Trend	Y	Y	Y	Y	Y	Y	Y	Y
Obs	823	823	823	823	823	823	823	823
F	134.5	135.45	135.29	144.89	136.05	145.51	139.16	141.26
Prob > F	0	0	0	0	0	0	0	0
R-sq	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj R sq	0.95	0.95	0.95	0.96	0.95	0.96	0.95	0.95
Root MSE	0.0365	0.0364	0.0364	0.0352	0.0363	0.0351	0.0359	0.0356
Exemp1	0.0101	0.0138	0.0126	0.0357	-0.0414	-0.0063	0.0015	0.0033
	0.08	0.01	0.02	0.00	0.06	0.44	0.85	0.66
Exemp2	0.0031	0.0240	0.0031	0.0208	-0.0239	0.0287	0.0325	0.0288
	0.81	0.02	0.81	0.03	0.28	0.00	0.00	0.00
Exemp3	0.0341	0.0530	0.0329	0.1030	-0.0094	0.0928	0.0203	0.0720
	0.13	0.01	0.07	0.00	0.66	0.00	0.29	0.00
income	0.0190	0.0187	0.0190	0.0206	0.0204	0.0166	0.0162	0.0174
	0.01	0.01	0.01	0.00	0.00	0.01	0.02	0.01
income2	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unemp	0.0622	0.0616	0.0619	0.0615	0.0599	0.0588	0.0613	0.0629
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.0021	-0.0020	-0.0021	-0.0021	-0.0020	-0.0020	-0.0021	-0.0021
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.0370	-0.0357	-0.0354	-0.0325	-0.0348	-0.0345	-0.0352	-0.0356
	0.01	0.01	0.01	0.02	0.02	0.01	0.01	0.01
divorce2	0.0014	0.0013	0.0013	0.0010	0.0012	0.0011	0.0011	0.0013
	0.17	0.20	0.21	0.30	0.25	0.26	0.25	0.20
poverty	0.0094	0.0096	0.0102	0.0093	0.0108	0.0105	0.0105	0.0100
	0.03	0.03	0.02	0.03	0.01	0.01	0.01	0.02
poverty2	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003
	0.04	0.04	0.03	0.05	0.02	0.02	0.03	0.03

Table IV.F7.GP: Chapter 7 Filing Rate, Grouped Probit; Continued

Exemp1	**eqihc2**	**eqihn2**	**eqihw2**	**eqihv2**	**eqinc2**	**eqinn2**	**eqinw2**	**eqinv2**
Exemp2	**eqihc3**	**eqihn3**	**eqihw3**	**eqihv3**	**eqinc3**	**eqinn3**	**eqinw3**	**eqinv3**
Exemp3	**eihcu**	**eihnu**	**eihwu**	**eihvu**	**eqinc4**	**einnu**	**einwu**	**einvu**
Trend	N	N	N	N	N	N	N	N
Obs	823	823	823	823	823	823	823	823
F	154.89	155.48	154.5	158.11	154	163	157.1	161.5
Prob > F	0	0	0	0	0	0	0	0
R-sq	0.9396	0.9398	0.9394	0.9407	0.9393	0.9424	0.9404	0.9419
Adj R sq	0.9335	0.9338	0.9334	0.9348	0.9332	0.9366	0.9344	0.9361
Root MSE	0.04307	0.043	0.04312	0.04266	0.04319	0.04205	0.04279	0.04223
Exemp1	0.0150	0.0162	0.0141	0.0268	-0.0248	0.0102	0.0144	0.0247
	0.01	0.01	0.02	0.00	0.28	0.19	0.05	0.00
Exemp2	0.0162	0.0263	0.0050	0.0164	-0.0093	0.0412	0.0339	0.0437
	0.20	0.02	0.71	0.13	0.68	0.00	0.00	0.00
Exemp3	0.0590	0.0662	0.0270	0.0577	-0.0197	0.0913	0.0514	0.0781
	0.02	0.00	0.10	0.00	0.39	0.00	0.00	0.00
income	0.0019	0.0014	0.0006	0.0003	0.0046	-0.0008	-0.0004	0.0016
	0.77	0.83	0.92	0.97	0.49	0.90	0.95	0.80
income2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	0.83	0.80	0.71	0.62	0.78	0.62	0.63	0.86
unemp	0.0810	0.0798	0.0800	0.0815	0.0784	0.0788	0.0798	0.0806
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.0026	-0.0025	-0.0025	-0.0026	-0.0024	-0.0025	-0.0025	-0.0026
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.0368	-0.0353	-0.0347	-0.0291	-0.0361	-0.0361	-0.0304	-0.0357
	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00
divorce2	0.0022	0.0022	0.0021	0.0019	0.0022	0.0021	0.0019	0.0021
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
poverty	0.0145	0.0142	0.0153	0.0138	0.0163	0.0136	0.0150	0.0150
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
poverty2	-0.0005	-0.0005	-0.0005	-0.0005	-0.0005	-0.0004	-0.0005	-0.0005
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table IV.F7.LP: Chapter 7 Filing Rate, Linear Probability

Exemp	**none**	**eihc**	**eihn**	**eihw**	**eihv**	**einc**	**einn**	**einw**	**einv**
Trend	No	No	No	No	No	No	No	No	No
Obs	823	823	823	823	823	823	823	823	823
F	102.59	103.09	102.4	102.12	101.61	110.31	101.86	104.28	103.81
R-sq	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Root MSE	0.34	0.34	0.34	0.34	0.34	0.33	0.34	0.34	0.34
Exemp		0.0016	0.0014	0.0003	0.0004	0.0190	0.0068	0.0031	0.0029
		0.00	0.00	0.25	0.04	0.00	0.00	0.20	0.12
income	0.0078	0.0152	0.0124	0.0046	0.0151	-0.0212	0.0046	0.0013	0.0064
	0.88	0.76	0.80	0.93	0.77	0.65	0.93	0.98	0.90
income2	-0.0002	-0.0003	-0.0003	-0.0002	-0.0003	0.0001	-0.0002	-0.0002	-0.0002
	0.63	0.53	0.56	0.69	0.57	0.83	0.69	0.74	0.68
unemp	0.3412	0.3424	0.3410	0.3426	0.3429	0.3643	0.3402	0.3449	0.3458
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.0121	-0.0122	-0.0121	-0.0122	-0.0122	-0.0135	-0.0121	-0.0123	-0.0124
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.2519	-0.2500	-0.2564	-0.2510	-0.2324	-0.1783	-0.2398	-0.2354	-0.2319
	0.01	0.01	0.01	0.01	0.01	0.04	0.01	0.01	0.01
divorce2	0.0074	0.0074	0.0073	0.0074	0.0067	0.0035	0.0064	0.0066	0.0065
	0.09	0.10	0.10	0.10	0.13	0.42	0.14	0.13	0.14
poverty	0.1074	0.0954	0.0982	0.1075	0.1090	0.0908	0.1068	0.1082	0.1074
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
poverty2	-0.0034	-0.0030	-0.0031	-0.0034	-0.0033	-0.0028	-0.0033	-0.0034	-0.0033
	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Exemp	**none**	**eihc**	**eihn**	**eihw**	**eihv**	**einc**	**einn**	**einw**	**einv**
Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	823	823	823	823	823	823	823	823	823
F	189.74	190.3	191.65	192.02	195.54	184.17	186.08	189.34	191.18
R-sq	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Root MSE	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Exemp		0.0012	0.0009	0.0007	0.0007	0.0078	0.0059	0.0062	0.0056
		0.00	0.00	0.02	0.00	0.01	0.00	0.00	0.00
income	0.1520	0.1519	0.1505	0.1530	0.1730	0.1360	0.1426	0.1404	0.1481
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
income2	-0.0019	-0.0019	-0.0019	-0.0019	-0.0021	-0.0017	-0.0018	-0.0018	-0.0018
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unemp	0.3580	0.3625	0.3607	0.3629	0.3550	0.3643	0.3551	0.3671	0.3655
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.0134	-0.0136	-0.0135	-0.0136	-0.0134	-0.0140	-0.0135	-0.0140	-0.0139
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.1332	-0.1302	-0.1350	-0.1352	-0.0877	-0.1077	-0.1206	-0.1193	-0.0949
	0.17	0.18	0.16	0.16	0.33	0.26	0.21	0.21	0.30
divorce2	0.0085	0.0084	0.0082	0.0083	0.0060	0.0060	0.0065	0.0069	0.0057
	0.12	0.11	0.12	0.12	0.22	0.26	0.22	0.20	0.28
poverty	0.0453	0.0374	0.0419	0.0433	0.0485	0.0422	0.0481	0.0456	0.0428
	0.06	0.12	0.08	0.07	0.04	0.08	0.05	0.06	0.07
poverty2	-0.0012	-0.0010	-0.0011	-0.0011	-0.0012	-0.0011	-0.0013	-0.0012	-0.0011
	0.11	0.00	0.13	0.13	0.11	0.16	0.09	0.13	0.16

Table IV.F7.LP: Chapter 7 Filing Rate, Linear Probability

Exemp	**none**	**eihc**	**eihn**	**eihw**	**eihv**	**einc**	**einn**	**einw**	**einv**
Trend	No	No	No	No	No	No	No	No	No
Obs	823	823	823	823	823	823	823	823	823
F	102.59	103.09	102.4	102.12	101.61	110.31	101.86	104.28	103.81
R-sq	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Rt MSE	0.34	0.34	0.34	0.34	0.34	0.33	0.34	0.34	0.34
Exemp		0.0016	0.0014	0.0003	0.0004	0.0190	0.0068	0.0031	0.0029
		0.00	0.00	0.25	0.04	0.00	0.00	0.20	0.12
inc	0.0078	0.0152	0.0124	0.0046	0.0151	-0.0212	0.0046	0.0013	0.0064
	0.88	0.76	0.80	0.93	0.77	0.65	0.93	0.98	0.90
inc2	-0.0002	-0.0003	-0.0003	-0.0002	-0.0003	0.0001	-0.0002	-0.0002	-0.0002
	0.63	0.53	0.56	0.69	0.57	0.83	0.69	0.74	0.68
un	0.3412	0.3424	0.3410	0.3426	0.3429	0.3643	0.3402	0.3449	0.3458
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
un2	-0.0121	-0.0122	-0.0121	-0.0122	-0.0122	-0.0135	-0.0121	-0.0123	-0.0124
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.2519	-0.2500	-0.2564	-0.2510	-0.2324	-0.1783	-0.2398	-0.2354	-0.2319
	0.01	0.01	0.01	0.01	0.01	0.04	0.01	0.01	0.01
divorce2	0.0074	0.0074	0.0073	0.0074	0.0067	0.0035	0.0064	0.0066	0.0065
	0.09	0.10	0.10	0.10	0.13	0.42	0.14	0.13	0.14
pov	0.1074	0.0954	0.0982	0.1075	0.1090	0.0908	0.1068	0.1082	0.1074
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
pov2	-0.0034	-0.0030	-0.0031	-0.0034	-0.0033	-0.0028	-0.0033	-0.0034	-0.0033
	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Exemp	**none**	**eihc**	**eihn**	**eihw**	**eihv**	**einc**	**einn**	**einw**	**einv**
Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	823	823	823	823	823	823	823	823	823
F	189.74	190.3	191.65	192.02	195.54	184.17	186.08	189.34	191.18
R-sq	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Rt MSE	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
ex1		0.0012	0.0009	0.0007	0.0007	0.0078	0.0059	0.0062	0.0056
		0.00	0.00	0.02	0.00	0.01	0.00	0.00	0.00
inc	0.1520	0.1519	0.1505	0.1530	0.1730	0.1360	0.1426	0.1404	0.1481
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
inc2	-0.0019	-0.0019	-0.0019	-0.0019	-0.0021	-0.0017	-0.0018	-0.0018	-0.0018
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
un	0.3580	0.3625	0.3607	0.3629	0.3550	0.3643	0.3551	0.3671	0.3655
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
un2	-0.0134	-0.0136	-0.0135	-0.0136	-0.0134	-0.0140	-0.0135	-0.0140	-0.0139
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.1332	-0.1302	-0.1350	-0.1352	-0.0877	-0.1077	-0.1206	-0.1193	-0.0949
	0.17	0.18	0.16	0.16	0.33	0.26	0.21	0.21	0.30
divorce2	0.0085	0.0084	0.0082	0.0083	0.0060	0.0060	0.0065	0.0069	0.0057
	0.12	0.11	0.12	0.12	0.22	0.26	0.22	0.20	0.28
pov	0.0453	0.0374	0.0419	0.0433	0.0485	0.0422	0.0481	0.0456	0.0428
	0.06	0.12	0.08	0.07	0.04	0.08	0.05	0.06	0.07
pov2	-0.0012	-0.0010	-0.0011	-0.0011	-0.0012	-0.0011	-0.0013	-0.0012	-0.0011
	0.11	0.00	0.13	0.13	0.11	0.16	0.09	0.13	0.16

Table IV.F7.LP: Chapter 7 Filing Rate, Linear Probability

Exemp1	**eihn**	**einn**	**eihn**	**einn**	**eihn**	**einn**
Exemp2	**eihn2**	**einn2**	**eohn**	**eonn**	**eohn**	**eonn**
Exemp3	**eihnu**	**einnu**	**eihnu**	**einnu**		
Trend	No	No	No	No	No	No
Obs	823	823	823	823	823	823
F	102.41	115.4	102.03	116.25	102.91	106.02
Prob > F	0	0	0	0	0	0
R-sq	0.92	0.93	0.92	0.93	0.92	0.92
Root MSE	0.34	0.32	0.34	0.32	0.34	0.34
Exempl	0.00653	0.01929	0.01295	0.01050	0.01156	0.01191
	0.00	0.00	0.00	0.00	0.00	0.00
Exemp2	-0.00001	-0.00016	-0.01113	-0.01578	-0.01064	-0.00743
	0.00	0.00	0.00	0.00	0.00	0.03
Exemp3	1.12434	1.09400	-0.35091	0.93004		
	0.01	0.00	0.12	0.00		
income	0.02617	-0.04050	0.00558	-0.02010	0.00393	0.00804
	0.61	0.40	0.91	0.68	0.94	0.87
income2	-0.00040	0.00016	-0.00017	-0.00002	-0.00015	-0.00017
	0.39	0.72	0.70	0.96	0.74	0.69
unemp	0.33788	0.33129	0.33660	0.33134	0.33924	0.34219
	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.01201	-0.01200	-0.01170	-0.01182	-0.01185	-0.01237
	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.27232	-0.26493	-0.23636	-0.24953	-0.23748	-0.20686
	0.00	0.00	0.01	0.00	0.01	0.02
divorce2	0.00832	0.00642	0.00674	0.00628	0.00664	0.00511
	0.06	0.15	0.12	0.15	0.13	0.24
poverty	0.08833	0.07559	0.10056	0.06943	0.10112	0.09969
	0.01	0.01	0.00	0.02	0.00	0.00
poverty2	-0.00282	-0.00218	-0.00319	-0.00180	-0.00322	-0.00300
	0.01	0.02	0.00	0.05	0.00	0.00

Table IV.F7.LP: Chapter 7 Filing Rate, Linear Probability

Exemp1	**eihn**	**einn**	**eihn**	**einn**	**eihn**	**einn**
Exemp2	**eihn2**	**einn2**	**eohn**	**eonn**	**eohn**	**eonn**
Exemp3	**eihnu**	**einnu**	**eihnu**	**einnu**		
Trend	Yes	Yes	Yes	Yes	Yes	Yes
Obs	823	823	823	823	823	823
F	189.08	183.59	182.98	184.73	183.57	185.64
Prob > F	0	0	0	0	0	0
R-sq	0.96	0.96	0.96	0.96	0.96	0.96
Root MSE	0.25	0.25	0.25	0.25	0.25	0.25
Exemp1	0.00196	0.01361	0.00850	0.00978	0.00756	0.01037
	0.32	0.00	0.00	0.00	0.01	0.00
Exemp2	0.00000	-0.00008	-0.00727	-0.01082	-0.00707	-0.00999
	0.70	0.00	0.01	0.00	0.01	0.00
Exemp3	0.07324	0.17479	-0.24488	0.14065		
	0.90	0.13	0.35	0.18		
income	0.14911	0.13467	0.14381	0.15127	0.14555	0.14760
	0.00	0.00	0.00	0.00	0.00	0.00
income2	-0.00184	-0.00170	-0.00178	-0.00186	-0.00180	-0.00182
	0.00	0.00	0.00	0.00	0.00	0.00
unemp	0.36071	0.35557	0.35901	0.34969	0.35838	0.35633
	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.01350	-0.01378	-0.01349	-0.01345	-0.01346	-0.01371
	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.14077	-0.12017	-0.15261	-0.08955	-0.14391	-0.08708
	0.15	0.21	0.12	0.32	0.14	0.34
divorce2	0.00857	0.00612	0.00915	0.00531	0.00869	0.00498
	0.11	0.27	0.10	0.31	0.12	0.34
poverty	0.04065	0.04182	0.04095	0.03412	0.04126	0.03394
	0.10	0.08	0.09	0.15	0.09	0.16
poverty2	-0.00111	-0.00107	-0.00107	-0.00071	-0.00108	-0.00071
	0.15	0.16	0.16	0.36	0.16	0.36

Table IV.F7.LP: Chapter 7 Filing Rate, Linear Probability

Exemp1 **Exemp2** **Exemp3**	**eqihc2** **eqihc3** **eihcu**	**eqihn2** **eqihn3** **eihnu**	**eqihw2** **eqihw3** **eihwu**	**eqihv2** **eqihv3** **eihvu**	**eqinc2** **eqinc3** **eqinc4**	**eqinn2** **eqinn3** **einnu**	**eqinw2** **eqinw3** **einwu**	**eqinv2** **eqinv3** **einvu**
Trend	N	N	N	N	N	N	N	N
Obs	823	823	823	823	823	823	823	823
F	103.29	103.72	102.53	103.99	109.01	104.91	103.81	98.6
Prob > F	0	0	0	0	0	0	0	0
R-sq	0.9202	0.9203	0.9202	0.921	0.923	0.9277	0.9216	0.9195
Root MSE	0.33652	0.33648	0.33672	0.33487	0.33075	0.32033	0.33366	0.3382
Exemp1	0.1892	0.1869	0.1927	0.2162	-0.5038	-0.0235	-0.0458	0.0212
	0.00	0.00	0.00	0.00	0.00	0.69	0.41	0.74
Exemp2	0.2154	0.2336	0.0872	0.0446	-0.2811	0.1947	0.2035	0.1678
	0.05	0.02	0.48	0.65	0.11	0.01	0.01	0.04
Exemp3	0.4464	0.4871	0.1724	0.3090	-0.0870	0.9631	-0.1109	0.1252
	0.00	0.00	0.12	0.01	0.63	0.00	0.41	0.28
income	0.0185	0.0111	0.0093	-0.0018	-0.0020	-0.0411	-0.0006	-0.0011
	0.70	0.82	0.85	0.97	0.97	0.39	0.99	0.98
income2	-0.0003	-0.0002	-0.0002	-0.0001	-0.0001	0.0002	-0.0001	-0.0001
	0.54	0.61	0.64	0.82	0.88	0.71	0.83	0.78
unemp	0.3569	0.3476	0.3486	0.3574	0.3506	0.3286	0.3421	0.3476
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.0132	-0.0127	-0.0128	-0.0133	-0.0128	-0.0119	-0.0129	-0.0127
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.2581	-0.2371	-0.2339	-0.1914	-0.2468	-0.2637	-0.2073	-0.2627
	0.01	0.01	0.01	0.04	0.01	0.00	0.02	0.01
divorce2	0.0084	0.0073	0.0074	0.0051	0.0077	0.0066	0.0049	0.0079
	0.06	0.11	0.10	0.25	0.08	0.14	0.25	0.07
poverty	0.1005	0.0969	0.1090	0.0918	0.1124	0.0807	0.1072	0.1044
	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
poverty2	-0.0032	-0.0031	-0.0035	-0.0029	-0.0035	-0.0023	-0.0033	-0.0032
	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00

Table IV.F7.LP: Chapter 7 Filing Rate, Linear Probability, Trend

Exemp1	**eqihc2**	**eqihn2**	**eqihw2**	**eqihv2**	**eqinc2**	**eqinn2**	**eqinw2**	**eqinv2**
Exemp2	**eqihc3**	**eqihn3**	**eqihw3**	**eqihv3**	**eqinc3**	**eqinn3**	**eqinw3**	**eqinv3**
Exemp3	**eihcu**	**eihnu**	**eihwu**	**eihvu**	**eqinc4**	**einnu**	**einwu**	**einvu**
Trend	Y	Y	Y	Y	Y	Y	Y	Y
Obs	823	823	823	823	823	823	823	823
F	192.5	193.89	195.9	193.02	183.82	181.02	183.44	183.44
Prob > F	0	0	0	0	0	0	0	0
R-sq	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Root MSE	0.2497	0.24992	0.24895	0.24599	0.24961	0.24725	0.24765	0.24765
Exemp1	0.0656	0.0860	0.0965	0.1914	-0.0593	-0.0039	-0.0361	-0.0361
	0.15	0.06	0.02	0.00	0.61	0.93	0.50	0.50
Exemp2	-0.0983	0.0936	-0.0268	0.1057	0.0654	0.1629	0.1051	0.1051
	0.31	0.39	0.78	0.24	0.55	0.00	0.12	0.12
Exemp3	0.1216	0.2757	0.2056	0.4066	0.0716	0.2882	0.2472	0.2472
	0.31	0.03	0.05	0.00	0.49	0.01	0.03	0.03
income	0.1520	0.1492	0.1491	0.1541	0.1647	0.1280	0.1336	0.1336
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
income2	-0.0019	-0.0018	-0.0018	-0.0019	-0.0020	-0.0016	-0.0017	-0.0017
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unemp	0.3610	0.3584	0.3610	0.3581	0.3560	0.3479	0.3639	0.3639
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.0137	-0.0135	-0.0137	-0.0138	-0.0133	-0.0136	-0.0140	-0.0140
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.1480	-0.1396	-0.1381	-0.1204	-0.1172	-0.1141	-0.1306	-0.1306
	0.14	0.16	0.16	0.19	0.20	0.22	0.19	0.19
divorce2	0.0092	0.0083	0.0081	0.0070	0.0068	0.0064	0.0079	0.0079
	0.10	0.13	0.14	0.17	0.19	0.22	0.16	0.16
poverty	0.0387	0.0401	0.0447	0.0375	0.0510	0.0410	0.0407	0.0407
	0.10	0.09	0.06	0.12	0.03	0.09	0.09	0.09
poverty2	-0.0010	-0.0011	-0.0012	-0.0009	-0.0014	-0.0010	-0.0010	-0.0010
	0.17	0.16	0.11	0.24	0.07	0.18	0.18	0.18

Table IV.F7.LP: Chapter 7 Filing Rate, Linear Probability, (18 Month Lag)

Exemp	eihc	eihn	eihw	eihv	einc	einn	einw	einv
Obs	823	823	823	823	823	823	823	823
F	101.91	101.61	102.31	101.94	114.05	102.17	102.01	102.35
Prob > F	0	0	0	0	0	0	0	0
R-sq	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Root MSE	0.34	0.34	0.34	0.34	0.33	0.34	0.34	0.34
Exemp	0.00138	0.00116	0.00012	0.00035	0.01781	0.00473	0.00112	0.00084
	0.01	0.00	0.60	0.04	0.00	0.01	0.54	0.72
income	0.01475	0.01256	0.00684	0.01572	-0.01881	0.00718	0.00749	0.00647
	0.77	0.80	0.89	0.76	0.69	0.88	0.88	0.90
income2	-0.00028	-0.00027	-0.00021	-0.00027	0.00005	-0.00020	-0.00021	-0.00021
	0.54	0.56	0.65	0.55	0.90	0.65	0.64	0.65
unemp	0.34129	0.34028	0.34139	0.34083	0.35544	0.33648	0.34122	0.34104
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.01214	-0.01208	-0.01213	-0.01200	-0.01277	-0.01189	-0.01212	-0.01212
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
divorce	-0.25953	-0.26368	-0.25317	-0.23585	-0.20146	-0.24834	-0.24636	-0.24893
	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01
divorce2	0.00776	0.00769	0.00749	0.00689	0.00456	0.00697	0.00718	0.00730
	0.08	0.08	0.09	0.12	0.28	0.11	0.11	0.10
poverty	0.10020	0.10136	0.10756	0.10948	0.10188	0.11121	0.10881	0.10833
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
poverty2	-0.00314	-0.00318	-0.00336	-0.00334	-0.00318	-0.00349	-0.00339	-0.00338
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table IV.C.GP: Grouped Probit

Exemp	**none**	**eihc**	**eihn**	**eihw**	**eihv**	**einc**	**einn**	**einw**	**einv**
Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	866	866	866	866	866	866	866	866	866
F	195.73	193.84	194.11	193.84	193.93	197.08	193.82	194.13	194.01
Prob > F	0	0	0	0	0	0	0	0	0
R-sq	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj R sq	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Rt MSE	0.0882	0.0882	0.0882	0.0882	0.0882	0.0875	0.0882	0.0882	0.0882
Exemp		-0.0001	-0.00017	0.00004	0.000065	-.0035	-0.00019	-0.0008	-0.0006
		0.68	0.28	0.70	0.48	0.00	0.79	0.27	0.37

Exemp	**none**	**eihc**	**eihn**	**eihw**	**eihv**	**einc**	**einn**	**einw**	**einv**
Trend	No	No	No	No	No	No	No	No	No
Obs	866	866	866	866	866	866	866	866	866
F	112.02	110.66	110.72	111.98	111.86	110.29	110.46	111.36	110.55
Prob > F	0	0	0	0	0	0	0	0	0
R-sq	0.9025	0.9028	0.9029	0.9039	0.9038	0.9025	0.9027	0.9034	0.9027
Adj R sq	0.8944	0.8947	0.8947	0.8958	0.8957	0.8943	0.8945	0.8953	0.8946
R o o t MSE	0.14919	0.149	0.14897	0.14821	0.14828	0.14923	0.14913	0.14858	0.14907
Exemp		0.0005	0.0004	0.0005	0.00035	0.0011	0.0011	0.0027	0.0012
		0.086	0.069	0.001	0.001	0.484	0.203	0.006	0.138

Exemp1 **Exemp2** **Exemp3**	**eihn** **eihn2** **eihnu**	**einn** **einn2** **einnu**	**eqihn2** **eqihn3** **eihnu**	**eqinn2** **eqinn3** **einnu**	**eihn** **eihn2** **eihnu**	**einn** **einn2** **einnu**	**eqihn2** **eqihn3** **eihnu**	**eqinn2** **eqinn3** **einnu**
Trend	Yes	Yes	Yes	Yes	No	No	No	No
Obs	866	866	866	866	866	866	866	866
F	194.18	195.9	191.89	196.89	117.68	120.53	115.37	120.06
Prob > F	0	0	0	0	0	0	0	0
R-sq	0.97	0.97	0.97	0.97	0.91	0.91	0.91	0.91
Adj R sq	0.96	0.96	0.96	0.96	0.90	0.91	0.90	0.91
Rt MSE	0.08743	0.08706	0.08793	0.08684	0.14208	0.14053	0.14337	0.14079
Exemp1	0.0025	-0.0023	0.0222	-0.032	0.0026	0.0015	0.0036	-0.028
	0.00	0.07	0.11	0.09	0.00	0.38	0.86	0.24
Exemp2	- 0.000008	0.00001	0.02987	-0.054	- 0.000004	-0.00002	0.0336	-0.0525
	0.01	0.30	0.27	0.01	0.15	0.05	0.41	0.07
Exemp23	0.7799	0.1768	-0.0701	0.1183	-0.0474	0.2747	-0.0271	0.1397
	0.05	0.00	0.19	0.01	0.89	0.00	0.75	0.01

Table IV.C.LP: Linear Probability

Exemp	**none**	**eihc**	**eihn**	**eihw**	**eihv**	**einc**	**einn**	**einw**	**einv**
Trend	No	No	No	No	No	No	No	No	No
Obs	867	867	867	867	867	867	867	867	867
F	245.06	235.62	236.94	236.83	240.06	237.53	239.25	231.46	236.45
Prob > F	0	0	0	0	0	0	0	0	0
R-sq	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Root MSE	0.04754	0.04748	0.04748	0.04715	0.04725	0.04756	0.04751	0.04733	0.0475
Exemp		0.00015	0.00013	0.00016	0.00011	0.00038	0.00038	0.00087	0.00041
		0.03	0.02	0.02	0.04	0.71	0.32	0.09	0.34

Exemp	**none**	**eihc**	**eihn**	**eihw**	**eihv**	**einc**	**einn**	**einw**	**einv**
Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	867	867	867	867	867	867	867	867	867
F	580.05	574.67	575.02	569.98	573.51	510.46	570.44	565.84	567.62
Prob > F	0	0	0	0	0	0	0	0	0
R-sq	0.9721	0.9721	0.9721	0.9721	0.9721	0.9726	0.9721	0.9721	0.9721
Root MSE	0.0283	0.0284	0.0284	0.0284	0.0284	0.0281	0.0284	0.0284	0.0284
Exemp		-1.4E-05	-4.7E-05	2.14E-05	2.75E-05	-0.00119	-8.2E-05	-0.00026	-0.00018
		0.789	0.281	0.698	0.507	0.003	0.742	0.386	0.477

Exemp1	**eihn**	**einn**	**eqihn2**	**eqinn2**	**eihn**	**einn**	**eqihn2**	**eqinn2**
Exemp2	**eihn2**	**einn2**	**eqihn3**	**eqinn3**	**eihn2**	**einn2**	**eqihn3**	**eqinn3**
Exemp3	**eihnu**	**einnu**	**eihnu**	**einnu**	**eihnu**	**einnu**	**eihnu**	**einnu**
Trend	Yes	Yes	Yes	Yes	No	No	No	No
Obs	867	867	867	867	867	867	867	867
F	595.45	527.66	598.37	550.6	206.22	217.6	211.16	217.34
Prob > F	0	0	0	0	0	0	0	0
R-sq	0.97	0.97	0.97	0.97	0.92	0.93	0.92	0.93
Root MSE	0.03	0.03	0.03	0.03	0.05	0.04	0.05	0.04
ex1	0.0008	-0.0008	0.008	-0.014	0.0007	0.0006	0.0002	-0.009
	0.00	0.13	0.09	0.06	0.01	0.55	0.98	0.41
ex2	-2E-06	3E--6	0.010761	-0.021	-1E-06	-1E-05	0.00821	-0.016
	0.01	0.57	0.12	0.02	0.10	0.13	0.51	0.24
ex3	0.2366	0.0701	-0.0200	0.0446	-0.0010	0.1077	-0.0104	0.0568
	0.04	0.02	0.14	0.04	0.99	0.00	0.55	0.01

Table V.N: Additional Notation

Var.	Meaning	Var.	Meaning
Fed1	§ 522(d) exemptions available and year is 95 or 96	Fed195	Fed1 and year is 95
Fed2	Fed1 and § 522(d) > state exemptions for non-homeowner	Fed196	Fed1 and year is 96
Fed3	Fed1 and § 522(d) > state exemptions for homeowner		

Table V.1: State and Year Effects Only

Trend	No	Yes	No	Yes	No	Yes
Dependent	FT	FT	F7	F7	F7/FT	F7/FT
Model	GP	GP	GP	GP	GP	GP
Obs	231	231	231	231	231	231
F	108.94	158.06	36.49	68.69	243.51	491.85
Prob > F	0	0	0	0	0	0
R-Sq	0.96	0.99	0.88	0.97	0.98	1.00
Adj-R Sq	0.95	0.98	0.85	0.95	0.98	0.99
Root MSE	0.03299	0.0205	0.0395	0.02226	0.07745	0.04047

Trend	No	Yes	No	Yes	No	Yes
Dependent	FT	FT	F7	F7	F7/FT	F7/FT
Model	LP	LP	LP	LP	LP	LP
Obs	231	231	231	231	231	231
F	170.85	172.85	65.21	127.4	424.67	1806.44
Prob > F	0	0	0	0	0	0
R-Sq	0.9641	0.9841	0.885	0.9681	0.9817	0.9964
Root MSE	0.00038	0.00028	0.34237	0.19737	0.02585	0.01251

Table V.FT.GP: Total Filings, Grouped Probit

Exemp1 **Exemp2**	**Fed1**	**Fed2**	**Fed3**	**Fed195** **Fed196**	**Fed295** **Fed296**	**Fed395** **Fed396**
Trend	No	No	No	No	No	No
Obs	231	231	231	231	231	231
F	155.87	162.53	159.07	151.91	158.39	154.93
Prob > F	0	0	0	0	0	0
R-Sq	0.98	0.98	0.98	0.98	0.98	0.98
Adj-R Sq	0.97	0.97	0.97	0.97	0.97	0.97
Root MSE	0.02506	0.02455	0.02481	0.02512	0.02461	0.02488
Exemp1	0.021294	0.034553	0.035267	0.018545	0.031739	0.033968
	0.01	0.00	0.00	0.10	0.01	0.02
Exemp2				0.02341	0.03679	0.03641
				0.02	0.00	0.01
income	0.02786	0.03043	0.02808	0.02801	0.03039	0.02807
	0.02	0.01	0.02	0.02	0.01	0.02
income2	-0.00030	-0.00033	-0.00030	-0.00030	-0.00033	-0.00030
	0.02	0.01	0.01	0.02	0.01	0.01
unemp	0.07697	0.06968	0.07326	0.07711	0.06994	0.07322
	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.00368	-0.00315	-0.00339	-0.00369	-0.00317	-0.00338
	0.00	0.01	0.01	0.00	0.01	0.01
poverty	-0.00186	-0.00164	-0.00070	-0.00216	-0.00162	-0.00058
	0.81	0.83	0.93	0.78	0.83	0.94
poverty2	0.00004	0.00004	0.00002	0.00005	0.00004	0.00001
	0.89	0.87	0.95	0.86	0.87	0.96
divorce	-0.12294	-0.11691	-0.13139	-0.12466	-0.11840	-0.13212
	0.00	0.00	0.00	0.00	0.00	0.00
divorce2	0.01234	0.01154	0.01294	0.01246	0.01164	0.01299
	0.00	0.00	0.00	0.00	0.00	0.00

Table V.FT.GP: Total Filings, Grouped Probit

Exemp1 **Exemp2**	**Fed1**	**Fed2**	**Fed3**	**Fed195** **Fed196**	**Fed295** **Fed296**	**Fed395** **Fed396**
Trend	Yes	Yes	Yes	Yes	Yes	Yes
Obs	231	231	231	231	231	231
F	217.88	217.08	216.92	214.18	214.24	214.96
Prob > F	0	0	0	0	0	0
R-Sq	0.99	0.99	0.99	0.99	0.99	0.99
Adj-R Sq	0.99	0.99	0.99	0.99	0.99	0.99
Root MSE	0.01648	0.01651	0.01652	0.01652	0.01651	0.01649
Exemp1	0.00783	0.003612	0.000952	0.009491	0.006455	0.005111
	0.42	0.74	0.94	0.35	0.56	0.69
Exemp2				0.00454	-0.00284	-0.00949
				0.69	0.82	0.53
income	0.02326	0.02244	0.02200	0.02266	0.02203	0.02147
	0.01	0.02	0.02	0.02	0.02	0.02
income2	-0.00025	-0.00024	-0.00023	-0.00024	-0.00024	-0.00023
	0.01	0.01	0.01	0.01	0.01	0.01
unemp	0.01499	0.01655	0.01701	0.01470	0.01545	0.01655
	0.27	0.22	0.21	0.28	0.25	0.22
unemp2	0.00041	0.00031	0.00027	0.00044	0.00038	0.00030
	0.67	0.75	0.78	0.66	0.69	0.76
poverty	-0.00335	-0.00391	-0.00436	-0.00313	-0.00437	-0.00552
	0.58	0.52	0.47	0.60	0.47	0.36
poverty2	0.00007	0.00009	0.00010	0.00006	0.00010	0.00014
	0.73	0.66	0.61	0.77	0.61	0.49
divorce	-0.00737	-0.00939	-0.01040	-0.00413	-0.00411	-0.00275
	0.84	0.79	0.77	0.91	0.91	0.94
divorce2	-0.00010	0.00014	0.00026	-0.00035	-0.00026	-0.00034
	0.98	0.97	0.94	0.92	0.94	0.92

Table V.FT.LP: Total Filings, Linear Probability

Exemp1	**Fed1**	**Fed2**	**Fed3**	**Fed1**	**Fed2**	**Fed3**
Trend	No	No	No	Yes	Yes	Yes
Obs	231	231	231	231	231	231
F	154.63	155.59	155.78	149.89	150.07	152.66
Prob > F	0	0	0	0	0	0
R-Sq	0.976	0.976	0.976	0.987	0.987	0.987
Root MSE	0.00032	0.00032	0.00032	0.00026	0.00026	0.00026
Exemp1	0.05850	0.18970	0.18610	0.04480	0.03290	-0.00993
	0.63	0.13	0.17	0.76	0.84	0.95
Exemp2						
income	0.33800	0.34700	0.33510	0.25690	0.25330	0.24770
	0.07	0.06	0.07	0.13	0.14	0.14
income2	-0.00343	-0.00356	-0.00344	-0.00236	-0.00233	-0.00228
	0.06	0.05	0.05	0.14	0.14	0.15
unemp	0.66370	0.59750	0.62390	0.12730	0.13390	0.13760
	0.00	0.00	0.00	0.55	0.52	0.52
unemp2	-0.03030	-0.02540	-0.02730	0.00698	0.00655	0.00619
	0.05	0.09	0.07	0.66	0.67	0.69
poverty	-0.04200	-0.03610	-0.03720	-0.03930	-0.04110	-0.04720
	0.64	0.68	0.67	0.64	0.62	0.56
poverty2	0.00108	0.00096	0.00099	0.00145	0.00152	0.00171
	0.73	0.75	0.74	0.64	0.62	0.57
divorce	-1.00140	-0.90980	-1.02510	0.23770	0.22880	0.21530
	0.11	0.16	0.10	0.71	0.71	0.73
divorce2	0.10920	0.09790	0.10890	-0.01980	-0.01880	-0.01710
	0.05	0.09	0.05	0.76	0.77	0.79

Table V.FT.LP: Total Filings, Linear Probability

Exemp1	**Fed195**	**Fed295**	**Fed395**	**Fed195**	**Fed295**	**Fed395**
Exemp2	**Fed196**	**Fed296**	**Fed396**	**Fed196**	**Fed296**	**Fed396**
Trend	No	No	No	Yes	Yes	Yes
Obs	231	231	231	231	231	231
F	157.22	157.13	155.49	186.88	189.54	191.48
Prob > F	0	0	0	0	0	0
R-Sq	0.976	0.976	0.976	0.988	0.988	0.988
Root MSE	0.00032	0.00032	0.00032	0.00025	0.00025	0.00025
Exemp1	0.20740	0.31310	0.32150	0.16420	0.14120	0.10550
	0.14	0.01	0.01	0.22	0.33	0.42
Exemp2	-0.08060	0.07070	0.04190	-0.19500	-0.21750	-0.29330
	0.62	0.69	0.83	0.32	0.31	0.12
income	0.32900	0.34860	0.33360	0.21080	0.23520	0.23160
	0.08	0.06	0.07	0.21	0.16	0.17
income2	-0.00335	-0.00358	-0.00342	-0.00194	-0.00217	-0.00212
	0.06	0.04	0.05	0.21	0.16	0.18
unemp	0.65380	0.58480	0.63000	0.09690	0.08280	0.12600
	0.00	0.00	0.00	0.65	0.70	0.55
unemp2	-0.02940	-0.02440	-0.02760	0.00938	0.01030	0.00700
	0.05	0.10	0.07	0.56	0.51	0.66
poverty	-0.02580	-0.03840	-0.05220	-0.02350	-0.05920	-0.08110
	0.77	0.66	0.55	0.76	0.46	0.31
poverty2	0.00049	0.00107	0.00147	0.00084	0.00220	0.00279
	0.88	0.73	0.63	0.77	0.46	0.35
divorce	-0.89360	-0.83520	-0.93350	0.46830	0.42850	0.41750
	0.13	0.17	0.13	0.44	0.48	0.50
divorce2	0.10160	0.09330	0.10260	-0.03720	-0.03310	-0.03260
	0.05	0.09	0.06	0.55	0.59	0.60

Table V.F7.GP: Chapter 7 Filings, Grouped Probit

Exemp1 **Exemp2**	**Fed1**	**Fed2**	**Fed3**	**Fed195** **Fed196**	**Fed295** **Fed296**	**Fed395** **Fed396**
Trend	No	No	No	No	No	No
Obs	231	231	231	231	231	231
F	49.67	53.04	51.71	48.38	51.71	50.39
Prob > F	0	0	0	0	0	0
R-Sq	0.93	0.93	0.93	0.93	0.93	0.93
Adj-R Sq	0.91	0.91	0.91	0.91	0.91	0.91
Root MSE	0.03128	0.03034	0.0307	0.03136	0.0304	0.03077
Exemp1	0.015244	0.040437	0.040437	0.013647	0.036255	0.036929
	0.14	0.00	0.00	0.32	0.01	0.04
Exemp2				0.01649	0.04375	0.04353
				0.19	0.00	0.01
income	0.02016	0.02258	0.01980	0.02025	0.02257	0.01982
	0.18	0.12	0.18	0.18	0.12	0.18
income2	-0.00021	-0.00024	-0.00021	-0.00021	-0.00024	-0.00021
	0.17	0.10	0.15	0.17	0.10	0.15
unemp	0.09947	0.08619	0.09085	0.09954	0.08653	0.09069
	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.00514	-0.00418	-0.00448	-0.00515	-0.00421	-0.00447
	0.00	0.01	0.00	0.00	0.01	0.00
poverty	0.00826	0.00970	0.01054	0.00813	0.00974	0.01089
	0.40	0.30	0.27	0.41	0.30	0.26
poverty2	-0.00027	-0.00031	-0.00033	-0.00026	-0.00031	-0.00034
	0.43	0.34	0.32	0.44	0.34	0.31
divorce	-0.15709	-0.14617	-0.16319	-0.15824	-0.14882	-0.16541
	0.00	0.00	0.00	0.00	0.00	0.00
divorce2	0.01594	0.01448	0.01615	0.01602	0.01466	0.01631
	0.00	0.00	0.00	0.00	0.00	0.00

Table V.F7.GP: Chapter 7 Filings, Grouped Probit

Exemp1	**Fed1**	**Fed2**	**Fed3**	**Fed195**	**Fed295**	**Fed395**
Exemp2				**Fed196**	**Fed296**	**Fed396**
Trend	Yes	Yes	Yes	Yes	Yes	Yes
Obs	231	231	231	231	231	231
F	95.91	95.17	94.99	94.31	93.81	93.94
Prob > F	0	0	0	0	0	0
R-Sq	0.98	0.98	0.98	0.98	0.98	0.98
Adj-R Sq	0.97	0.97	0.97	0.97	0.97	0.97
Root MSE	0.01785	0.01792	0.01794	0.01789	0.01794	0.01792
Exemp1	0.013575	0.008369	0.006794	0.01549	0.011088	0.010802
	0.19	0.46	0.61	0.16	0.35	0.44
Exemp2				0.00971	0.00224	-0.00319
				0.43	0.87	0.84
income	0.02666	0.02551	0.02494	0.02594	0.02499	0.02430
	0.01	0.01	0.01	0.01	0.01	0.02
income2	-0.00027	-0.00026	-0.00026	-0.00027	-0.00026	-0.00025
	0.01	0.01	0.01	0.01	0.01	0.01
unemp	0.03050	0.03246	0.03291	0.03017	0.03152	0.03268
	0.04	0.03	0.02	0.04	0.03	0.02
unemp2	-0.00061	-0.00074	-0.00077	-0.00058	-0.00067	-0.00075
	0.55	0.47	0.45	0.58	0.52	0.46
poverty	0.00126	0.00054	-0.00020	0.00139	0.00008	-0.00134
	0.85	0.94	0.98	0.83	0.99	0.84
poverty2	-0.00009	-0.00006	-0.00004	-0.00009	-0.00004	0.00000
	0.70	0.79	0.87	0.68	0.85	1.00
divorce	0.00824	0.00600	0.00366	0.01237	0.01169	0.01148
	0.83	0.87	0.92	0.74	0.76	0.76
divorce2	-0.00169	-0.00142	-0.00115	-0.00200	-0.00184	-0.00175
	0.62	0.68	0.74	0.57	0.60	0.61

Table V.F7.LP: Chapter 7 Filings, Linear Probability

Exemp1 **Exemp2**	**Fed1**	**Fed2**	**Fed3**	**Fed195** **Fed196**	**Fed295** **Fed296**	**Fed395** **Fed396**
Trend	No	No	No	No	No	No
Obs	231	231	231	231	231	231
F	63.84	63.4	63.25	65.03	62.19	63.39
Prob > F	0	0	0	0	0	0
R-Sq	0.927	0.929	0.928	0.928	0.930	0.928
Root MSE	0.28056	0.27545	0.27798	0.28002	0.27616	0.27856
Exemp1	0.01817	0.25471	0.20996	0.11481	0.27228	0.25330
	0.89	0.02	0.05	0.34	0.01	0.01
Exemp2				-0.07205	0.23776	0.16383
				0.70	0.15	0.30
income	0.14658	0.15566	0.14091	0.14073	0.15590	0.14045
	0.33	0.28	0.34	0.35	0.28	0.34
income2	-0.00157	-0.00174	-0.00158	-0.00152	-0.00174	-0.00158
	0.28	0.21	0.26	0.29	0.21	0.26
unemp	0.68388	0.56688	0.61678	0.67751	0.56508	0.61871
	0.00	0.00	0.00	0.00	0.00	0.00
unemp2	-0.03436	-0.02581	-0.02935	-0.03379	-0.02566	-0.02945
	0.01	0.04	0.02	0.01	0.04	0.02
poverty	0.09306	0.10819	0.10420	0.10356	0.10786	0.09938
	0.28	0.19	0.20	0.21	0.19	0.23
poverty2	-0.00296	-0.00339	-0.00327	-0.00335	-0.00338	-0.00312
	0.32	0.22	0.24	0.25	0.23	0.26
divorce	-1.60747	-1.44875	-1.60581	-1.53758	-1.43813	-1.57653
	0.00	0.02	0.00	0.00	0.02	0.01
divorce2	0.16814	0.14859	0.16431	0.16324	0.14793	0.16230
	0.00	0.01	0.00	0.00	0.01	0.00

Table V.F7.LP: Chapter 7 Filings, Linear Probability

Exemp1	**Fed1**	**Fed2**	**Fed3**	**Fed195**	**Fed295**	**Fed395**
Exemp2				**Fed196**	**Fed296**	**Fed396**
Trend	Yes	Yes	Yes	Yes	Yes	Yes
Obs	231	231	231	231	231	231
F	160.43	160.38	178.08	208.5	189.04	192.27
Prob > F	0	0	0	0	0	0
R-Sq	0.977	0.977	0.977	0.978	0.977	0.977
Root MSE	0.17465	0.17461	0.1749	0.17116	0.17396	0.17344
Exemp1	0.07398	0.08555	0.05116	0.15542	0.12966	0.11558
	0.50	0.47	0.63	0.11	0.25	0.19
Exemp2				-0.08949	-0.01639	-0.10703
				0.52	0.92	0.41
income	0.21784	0.21664	0.20755	0.18644	0.20924	0.19859
	0.04	0.04	0.05	0.07	0.04	0.06
income2	-0.00211	-0.00211	-0.00202	-0.00182	-0.00205	-0.00194
	0.03	0.03	0.04	0.05	0.03	0.05
unemp	0.15404	0.16201	0.16650	0.13336	0.14121	0.16003
	0.27	0.24	0.23	0.35	0.32	0.25
unemp2	0.00097	0.00054	0.00017	0.00261	0.00205	0.00062
	0.93	0.96	0.99	0.80	0.84	0.95
poverty	0.02121	0.02316	0.01441	0.03201	0.01577	-0.00452
	0.72	0.70	0.80	0.55	0.79	0.94
poverty2	-0.00096	-0.00099	-0.00072	-0.00137	-0.00072	-0.00011
	0.64	0.63	0.72	0.45	0.73	0.96
divorce	-0.09854	-0.10080	-0.13222	0.05864	-0.01950	-0.01936
	0.82	0.82	0.76	0.89	0.96	0.96
divorce2	0.01197	0.01207	0.01570	0.00008	0.00623	0.00704
	0.78	0.78	0.72	1.00	0.88	0.87

Table V.C.GP: Choice of Chapter Grouped Probit

Exemp1	**Fed1**	**Fed2**	**Fed3**	**Fed195**	**Fed295**	**Fed395**
Exemp2				**Fed196**	**Fed296**	**Fed396**
Trend	Yes	Yes	Yes	Yes	Yes	Yes
Obs	231	231	231	231	231	231
F	464.06	461.11	463.34	455.65	452.58	454.67
Prob > F	0	0	0	0	0	0
R-Sq	1.00	1.00	1.00	1.00	1.00	1.00
Adj-R Sq	0.99	0.99	0.99	0.99	0.99	0.99
Root MSE	0.03923	0.03936	0.03926	0.03935	0.03948	0.03939
Exemp1	0.025254	0.012564	0.029688	0.027939	0.014616	0.031496
	0.28	0.64	0.33	0.25	0.60	0.32
Exemp2				0.01990	0.00775	0.02506
				0.466	0.806	0.497
income	0.01111	0.00869	0.01031	0.01016	0.00845	0.01013
	0.607	0.688	0.632	0.641	0.697	0.639
income2	-0.00013	-0.00011	-0.00013	-0.00012	-0.00010	-0.00012
	0.557	0.627	0.566	0.586	0.635	0.572
unemp	0.06994	0.07579	0.07431	0.06961	0.07505	0.07404
	0.037	0.022	0.024	0.039	0.025	0.025
unemp2	-0.00482	-0.00523	-0.00508	-0.00480	-0.00518	-0.00507
	0.048	0.03	0.034	0.049	0.033	0.035
poverty	0.02814	0.02666	0.02736	0.02856	0.02628	0.02683
	0.054	0.071	0.059	0.052	0.077	0.069
poverty2	-0.00091	-0.00086	-0.00088	-0.00093	-0.00085	-0.00087
	0.056	0.074	0.063	0.053	0.08	0.072
divorce	0.13644	0.12902	0.12529	0.14174	0.13278	0.12874
	0.136	0.158	0.168	0.127	0.152	0.164
divorce2	-0.01265	-0.01179	-0.01147	-0.01306	-0.01208	-0.01175
	0.128	0.155	0.163	0.12	0.149	0.159

Table V.C.GP: Choice of Chapter Grouped Probit

Exemp1	**Fed1**	**Fed2**	**Fed3**	**Fed195**	**Fed295**	**Fed395**
Exemp2				**Fed196**	**Fed296**	**Fed396**
Trend	No	No	No	No	No	No
Obs	231	231	231	231	231	231
F	228.81	227.19	226.96	222.87	221.67	221.56
Prob > F	0	0	0	0	0	0
R-Sq	0.98	0.98	0.98	0.98	0.98	0.98
Adj-R Sq	0.98	0.98	0.98	0.98	0.98	0.98
Root MSE	0.07198	0.07223	0.07226	0.07217	0.07236	0.07238
Exemp1	-0.04171	0.036247	0.040309	-0.03748	0.022402	0.022461
	0.08	0.19	0.22	0.25	0.54	0.60
Exemp2				-0.04484	0.04688	0.05534
				0.121	0.158	0.164
income	-0.04605	-0.04068	-0.04287	-0.04626	-0.04102	-0.04319
	0.181	0.24	0.215	0.181	0.238	0.213
income2	0.00050	0.00043	0.00045	0.00050	0.00043	0.00045
	0.154	0.227	0.203	0.154	0.222	0.2
unemp	0.16919	0.12429	0.12604	0.16903	0.12540	0.12551
	0.001	0.016	0.014	0.001	0.015	0.015
unemp2	-0.01124	-0.00797	-0.00807	-0.01123	-0.00806	-0.00804
	0.003	0.04	0.037	0.004	0.038	0.038
poverty	0.06896	0.07506	0.07698	0.06946	0.07525	0.07859
	0.003	0.001	0.001	0.003	0.001	0.001
poverty2	-0.00215	-0.00238	-0.00243	-0.00217	-0.00238	-0.00248
	0.005	0.002	0.002	0.005	0.002	0.001
divorce	-0.32798	-0.29188	-0.30453	-0.32562	-0.29819	-0.31345
	0.007	0.016	0.012	0.008	0.014	0.01
divorce2	0.03487	0.03018	0.03136	0.03470	0.03060	0.03197
	0.001	0.005	0.003	0.001	0.004	0.003

Table V.C.LP: Choice of Chapter, Linear Probability

Exemp1	**Fed195**	**Fed295**	**Fed395**	**Fed195**	**Fed295**	**Fed395**
Exemp2	**Fed196**	**Fed296**	**Fed396**	**Fed196**	**Fed296**	**Fed396**
Trend	No	No	No	Yes	Yes	Yes
Obs	231	231	231	231	231	231
F	376.26	389.42	399.9	1393.03	1350.07	1323.99
Prob > F	0	0	0	0	0	0
R-Sq	0.985	0.985	0.985	0.997	0.997	0.997
Root MSE	0.02425	0.02429	0.02432	0.01215	0.0122	0.01218
Exemp1	-0.01364	0.01038	0.00862	0.01005	0.00510	0.00976
	0.26	0.28	0.39	0.19	0.58	0.38
Exemp2	-0.01551	0.01728	0.01982	0.00911	0.00231	0.00793
	0.38	0.16	0.17	0.32	0.83	0.58
income	-0.01767	-0.01572	-0.01670	0.00366	0.00264	0.00308
	0.15	0.20	0.17	0.60	0.70	0.64
income2	0.00019	0.00016	0.00017	-0.00004	-0.00003	-0.00004
	0.13	0.18	0.16	0.54	0.62	0.57
unemp	0.05081	0.03535	0.03624	0.02210	0.02387	0.02372
	0.00	0.03	0.03	0.05	0.04	0.04
unemp2	-0.00336	-0.00224	-0.00230	-0.00150	-0.00162	-0.00160
	0.01	0.07	0.06	0.08	0.05	0.06
poverty	0.02217	0.02446	0.02549	0.00831	0.00743	0.00753
	0.00	0.00	0.00	0.11	0.15	0.13
poverty2	-0.00067	-0.00076	-0.00079	-0.00027	-0.00024	-0.00024
	0.01	0.01	0.01	0.12	0.17	0.15
divorce	-0.09280	-0.08248	-0.08907	0.04109	0.03958	0.03777
	0.02	0.05	0.03	0.14	0.15	0.16
divorce2	0.00976	0.00825	0.00886	-0.00392	-0.00370	-0.00355
	0.01	0.02	0.01	0.12	0.14	0.15

Table V.C.LP: Choice of Chapter, Linear Probability

Exemp1	**Fed1**	**Fed2**	**Fed3**	**Fed1 Fed2**		**Fed3**
Exemp2						
Trend	No	No	No	Yes	Yes	Yes
Obs	231	231	231	231	231	231
F	381.92	410.41	419.92	1425.11	1350.01	1340.55
Prob > F	0	0	0	0	0	0
R-Sq	0.985	0.985	0.985	0.997	0.997	0.997
Root MSE	0.02419	0.02424	0.02429	0.01211	0.01217	0.01214
Exemp1	-0.01472	0.01431	0.01472	0.00973	0.00425	0.00924
	0.25	0.11	0.15	0.20	0.64	0.41
Exemp2						
income	-0.01762	-0.01566	-0.01665	0.00377	0.00275	0.00314
	0.15	0.19	0.17	0.58	0.68	0.64
income2	0.00019	0.00016	0.00017	-0.00004	-0.00003	-0.00004
	0.13	0.18	0.16	0.52	0.61	0.56
unemp	0.05086	0.03501	0.03643	0.02215	0.02418	0.02378
	0.00	0.03	0.03	0.05	0.03	0.04
unemp2	-0.00337	-0.00222	-0.00231	-0.00150	-0.00165	-0.00160
	0.01	0.07	0.05	0.08	0.05	0.06
poverty	0.02205	0.02446	0.02496	0.00827	0.00756	0.00768
	0.01	0.00	0.00	0.10	0.14	0.12
poverty2	-0.00067	-0.00076	-0.00077	-0.00027	-0.00024	-0.00025
	0.01	0.01	0.01	0.12	0.16	0.14
divorce	-0.09343	-0.08053	-0.08590	0.04049	0.03803	0.03683
	0.02	0.05	0.03	0.14	0.17	0.17
divorce2	0.00981	0.00812	0.00864	-0.00387	-0.00358	-0.00347
	0.01	0.02	0.01	0.13	0.16	0.16

Table 1: Returns to the Mortgage Lender

Debtor Action Return to Lender	Chapter 7 Foreclosure	No Filing Foreclosure	Chapter 7 Reaffirm	No Filing Reaffirm	Chapter 13	Full Repayment
Costs	C_{7f}	C_{nf}	$C_{7r}(k+E_P-M)$	$C_{NR}(gk+E_P-M)$	$C_{13}(k+E_h+E_P-h-R_{13})$	$C_r(k-U-M)$
Mortgage			M	M	M	M
Foreclosure	Min[h, M+Q_7]-Q_7	Min[h, M+Q_n]-Q_n				
Deficiency Judgement	(P-E_P) Max[M+Q_7 -h, 0] /(U+Max[M+ Q_7 -h, 0])	((1-g)k+P-E_P) Max[M+Q_7 -h, 0] /(U+Max[M+ Q_7 -h, 0])				
Net Return	$F_7(h)-C_{7f}$	$F_n(h)-C_{nf}$	M-$C_{7r}(k+E_P-M)$	M-$C_{nr}((1-g)k+E_P-M)$	M-$C_{13}(k+E_P+E_h-h-R_{13})$	M-$C_r(k+P-U-M)$

Notes: Gross and net returns to the mortgage lender as a function of debtor action. See text for details.

Table 2. The Probability of Being Denied Credit and the Homestead Exemption

Variable	Parameter Estimate	Standard Error	Wald Chi-Square	P-Value	Std Estimate	
Constant	-1.5742	0.1877	70.3	0.0001	.	.
Homestead Exemp	-0.0320	0.0001	13.0	0.0003	-0.05907	1.000
Loan-to-Income Ratio	0.0020	0.0008	6.5	0.0105	0.01356	1.002
Year91	0.1183	0.0196	36.6	0.0001	0.02025	1.126
Year92	-0.0737	0.0179	16.9	0.0001	-0.01625	0.929
Year93	-0.2096	0.0178	139.3	0.0001	-0.05116	0.811
Year94	0.0218	0.0185	1.4	0.2367	0.00463	1.022
Year95	0.2854	0.0179	252.8	0.0001	0.05807	1.330
Income	-0.3310	0.0001	1282.4	0.0001	-0.26603	0.997
Income Squared	0.0036	0.0001	1079.5	0.0001	0.18689	1.000
African-American	0.7129	0.0176	1646.7	0.0001	0.07932	2.040
Female	-0.0290	0.0122	5.7	0.0173	-0.00601	0.971
Single	0.2783	0.0105	700.6	0.0001	0.06775	1.321
Unemployment	0.8114	0.3312	6.0	0.0143	0.00712	2.251

Observations: 433,699
Denied: 66,011
Approved: 367,688

Model Fitting Information and Testing Global Null Hypothesis BETA=0
Concordant Pairs = 63.7%
Discordant Pairs = 35.4%
Tied Pairs = 0.9%

LR Test for Regressors: 13392.76 (p=0.0001)

Notes: Table 2 presents binary choice model estimates for the probability of being turned down on a mortgage application. The data are taken from the Home Mortgage Discrimination Act database for 1990-1995. Exemption quartiles are dummy variables which represent the size of the homestead exemption available in the relevant state. A pair of observations is defined as concordant (discordant) if the observation with the larger (smaller) response has a larger predicted probability. LR test indicates the chi-square statistic for joint significance of all regressors. Standardized estimates are normalized by the sample standard deviation of the associated regressor.

Table 3. The Probability of Being Denied Credit and the Homestead Exemption

Variable	Parameter Estimate	Std Error	Wald Chi-Square	P-Value	Standardized Estimate	
Constant	-1.4643	0.1902	59.2	0.0001	.	.
2nd quartile exemption	0.0283	13.513	0.0	-0.0247	0.9013	
3rd quartile exemption	-0.2053	0.0481	18.2	0.0001	-0.0529	0.814
4th quartile exemption	-0.1658	0.0716	5.4	0.0206	-0.0323	0.847
Loan-to-Income ratio	0.0020	0.0008	6.5	0.0106	0.0135	1.002
Year91	0.1200	0.0196	37.6	0.0001	0.0205	1.127
Year92	-0.0734	0.0179	16.7	0.0001	-0.0161	0.929
Year93	-0.2100	0.0178	139.6	0.0001	-0.0512	0.811
Year94	0.0227	0.0185	1.5	0.2202	0.0048	1.023
Year95	0.2864	0.0180	254.2	0.0001	0.0582	1.332
Income	-0.3331	0.0001	1282.0	0.0001	-0.2659	0.997
Income squared	0.0036	0.0001	1079.8	0.0001	0.1868	1.000
African-American	0.7126	0.0176	1645.4	0.0001	0.0792	2.039
Female	-0.0287	0.0122	5.6	0.0182	-0.0059	0.972
Single	0.2828	0.0105	731.8	0.0001	0.0688	1.327
Unemployment	0.5638	0.3337	2.9	0.0911	0.0049	1.757

Model Fitting Information and Testing Global Null Hypothesis BETA=0
Concordant Pairs = 63.7%
Discordant Pairs = 35.4%
Tied Pairs = 0.9%

LR Test of Regressors: 13121.96 (p=0.0001)

Notes: Table 3 presents binary choice model estimates for the probability of being turned down on a mortgage application. Exemption refers to the homestead exemption available in bankruptcy in the relevant state. A pair of observations is defined as concordant (discordant) if the observation with the larger (smaller) response has a larger predicted probability. LR test indicates the chi-square statistic for joint significance of all regressors.

Table 4. The Probability of Being Denied Credit
Homestead and Property Exemptions

Variable	Parameter Estimate	Std Error	Wald Chi-Square	P-Value	Standardized Estimate	
Constant	-1.5998	0.1878	72.542	0.0001	.	.
Homestead exemption	-0.0341	0.0001	14.599	0.0001	-0.06257	1.000
Personal Property ex	0.5282	0.0011	22.817	0.0001	0.28665	1.005
Loan-Income ratio	0.0021	0.0008	6.5642	0.0104	0.01364	1.002
Year91	0.1285	0.0197	42.653	0.0001	0.02200	1.137
Year92	-0.0630	0.0181	12.164	0.0005	-0.01390	0.939
Year93	-0.1973	0.0179	120.96	0.0001	-0.04815	0.821
Year94	0.0295	0.0185	2.5280	0.1118	0.00624	1.030
Year95	0.2914	0.0180	262.26	0.0001	0.05929	1.338
Income	-0.3332	0.0001	1279.1	0.0001	-0.26559	0.997
Income squared	0.0036	0.0001	1079.9	0.0001	0.18667	1.000
African-American	0.7135	0.0176	1649.0	0.0001	0.07939	2.041
Female	-0.0293	0.0122	5.8164	0.0159	-0.00609	0.971
Single	0.2966	0.0112	703.03	0.0001	0.07219	1.345
Unemployment	0.7098	0.3318	4.5767	0.0324	0.00623	2.034

Model Fitting Information and Testing Global Null Hypothesis BETA=0
Concordant Pairs = 63.7%
Discordant Pairs = 35.4%
Tied Pairs = 0.9%

LR Test of Regressors: 13155.16 (p=0.0001)

Notes: Table 4 presents binary choice model estimates for the probability of being turned down on a mortgage application. Exemption refers to the homestead exemption available in bankruptcy in the relevant state. A pair of observations is defined as concordant (discordant) if the observation with the larger (smaller) response has a larger predicted probability. LR test indicates the chi-square statistic for joint significance of all regressors.

Table 5. State-level Fixed Effects Regression Estimates
Homestead and Property Exemptions

Variable	Estimated Coefficient	Standard Error	t-statistic
Mortgage Rates			
Homestead exemption	-0.036	0.024	-1.54
Property Exemption	-0.182	.486	-0.374
Unemployment rate	-0.628	0.908	-0.692
Wage rate	-0.076	0.059	-1.301
Percent African-American	1.714	5.923	0.289
Percent senior	17.03	8.933	1.906
Year91	-0.641	0.047	-13.68
Year92	-1.896	0.056	-33.73
Year93	-2.769	0.069	-40.05
Year94	-2.353	0.081	-28.94
Year95	-1.991	0.094	-21.11
Std. error of regression = 0.217	R-squared = 0.964	Adjusted R-squared = 0.956	
F test of A,B=Ai,B: F(50,244) = 6.259, P-value = [.000]			
Hausman test: Chi sq (6) = 5.170, P-value = [.522]			
Loan to Value Ratio			
Homestead exemption	-0.079	0.0267	-0.296
Property Exemption	-0.636	.554	-1.147
Unemployment rate	-12.14	10.36	-1.172
Wage rate	2.332	0.669	3.487
Percent African-American	11.41	67.57	0.169
Percent senior	325.6	101.9	3.195
Year91	-0.744	0.534	-1.393
Year92	-0.631	0.641	-0.984
Year93	-1.394	0.789	-1.767
Year94	0.362	0.927	-0.391
Year95	0.112	1.076	-0.104
Std. error of regression = 2.48	R-squared = 0.659	Adjusted R-squared = 0.334	
F test of A,B=Ai,B: F(50,244) = 4.340, P-value = [.000]			
Hausman test: Chi sq (6) = 32.27, P-value = [0.00]			

Note: Linear regression model estimates of state-level mortgage rates and average mortgage loan to value ratios. Hausman (1978) test indicates specification test of random effects model against the alternative of the fixed effects model.

Table 6
Probabilities of Denial of a Mortgage Application for Typical Consumers

		Delaware	South Carolina	West Virginia	Mississippi
Homestead		10,000	5,000	15,000	150,000
Personal Property		10,000	5,400	19,200	20,000
		Estimated Probabilities			
	Low Inc	.208	.188	.224	.201
	Middle Inc	.195	.176	.210	.188
	High Inc	.134	.120	.145	.129
		Estimated Percentage Changes in Probabilities			
4x Homestead Exemp	Low Inc	-0.76	-0.76	-1.12	-11.1
	Middle Inc	-0.77	-0.77	-1.34	-11.2
	High Inc	-0.83	-0.83	-1.23	-11.9
4x Property Exemp	Low Inc	2.54	1.39	5.02	5.40
	Middle Inc	2.69	1.42	5.11	5.49
	High Inc	2.90	1.54	5.56	5.91

Notes: Probabilities are fitted values from logit regression results shown in Table 4. Income levels are defined as less than $24,999, between $25,000 and $49,999 and more than $50,000. Each income category contains roughly one third of U.S. families (see Kennickel, Starr-McCluer and Sunden (1997). Loan-to-income ratios are set equal to the median values taken from the 1995 HMDA data for each income level.

Table 7
Rates and Terms of a Mortgage Application
for Typical Consumers

Exemption		Delaware	South Carolina	West Virginia	Mississippi
Homestead		10,000	5,000	15,000	150,000
Personal Property		10,000	5,400	19,200	20,000
		Estimated Rates and Terms			
	Rates	7.54	7.79	7.91	8.23
	LTV Ratios	83.0	84.3	79.5	81.0
		Estimated Percentage Changes in Rates and Terms			
Quadruple Homestead Exemption	Rates	-.144	-.070	-.206	-.197
	LTV Ratios	-.029	-.014	-.045	-.440
Quadruple Property Exemption	Rates	.722	.377	1.32	1.32
	LTV Ratios	2.30	-1.24	-4.61	4.70

Notes: Mortgage Rates and Loan-to-Value ratios are fitted values from logit regression results shown in Table 4. Income levels are defined as less than $24,999, between $25,000 and $49,999 and more than $50,000. Each income category contains roughly one third of U.S. families (see Kennickel, Starr-McCluer and Sunden (1997). Loan-to-income ratios are assumed equal to the median calculated from the 1995 HMDA data.

The Effect of Changes in the Property Exemption

Proof of Lemma 1

By straightforward application of Leibniz's rule, the derivative of the lender's expected return, E(R) with respect to E_h can be written as

$$\int_{-M+E_h}^{H}\Big[\int_{k=0}^{h-E_h-E_p} b_{E_h}(F_7-F_n+C_{nf}-C_{7f})j(k)dk+\int_{k=h-E_h-E_p}^{K_d} b_{E_h}(M-F_n+C_{nf}-C_{13})+b(dC_{13}/dE_h)j(k))f(h)\ dk\Big]\ dh+$$

$$\int_{-M+E_h}^{H}[j(R_{13}+h-E_h-E_p)b(M-F_7+C_{7f}-C_{13})+j(K_d)(dK_d/dE_h)((1-b)(M-F_n)+C_r-bC_{13}-(1-b)C_{nf})]f(h)dh+$$

$$+E_h)[\int_{k=M-E_p}^{M-E_p+R_{13}} b(M-F_7+C_{7f}-C_{7r})j(k)dk+\int_{M-E_p+R_{13}}^{K_D} b(C_{13}-C_{7r})j(k)dk+\int_{k=(M-E_p)/g}^{K_D}(1-b)(M-F_n+C_{nf}-C_{nr})j(k)$$

It remains now to sign the terms of the derivative. We maintain throughout that of $b_{Ep}>0$, the probability of filing is increasing in the exemption. Assumptions one through three imply that every term from above is positive save one, $(1\text{-}b)(F_N\text{ -}M)+C_r\text{ -}b\ C_{13}\text{-}(1\text{-}b)C_{nf}$.

The positivity of this term arises from assumption four. To see this, note that if $F_N<M$, $(dK_D/d\ E_h)=0$ as the debtor will only consider the homestead exemption if the mortgage creditor is repaid in full and he will receive some distribution after foreclosure. Therefore, the sign of this term depends again on the relative transactions

costs. Becasue $C_{13}<C_r$, this is positive as long as b is sufficiently close to one. This will hold when v is large relative to R_{13} and T_{13} is small relative to T_N. QED.

Proof of Lemma 2. The derivative of the home mortgage lender's expected return, E(R), with respect to E_p gives:

$$\int_{h=0}^{M-v} (M-bF_7-(1-b)F_n+C_r-bC_{7f}-(1-b)C_{nf})j(K_d)(dK_d/dE_p)f(h)dh +$$

$$\int_{h=M-v}^{M+E_h} (C_r-bC_{7r}-(1-b)C_{nr})j(K_d)(dK_d/dE_p)f(h)dh +$$

$$\int_{h=M+E_h}^{H} ((1-b)(M-F_n)+C_r-bC_{13}-(1-b)C_{nf}))(dK_d/dE_p)j(K_d)f(h)dh +$$

$$\int_{h=0}^{M-v} (\int_{k=0}^{K_d} (b_{E_p}(F_7-F_n+C_{nf}-C_{7f})+b(dF_7/dE_p)+(1-b)(dF_n/dE_p))j(k))f(h) +$$

$$\int_{h=M-v}^{M+E_h} (\int_{k=0}^{M-E_p} (b_{E_p}(F_7-F_n+C_{nf}-C_{7f})+b(dF_7/dE_p)+(1-b)(dF_n/dE_p))j(k)f(h) +$$

$$\int_{-M+E_h}^{H} [\int_{k=0}^{R_{13}+h-E_h-E_p} b_{E_h}(F_7-F_n+C_{nf}-C_{7f})j(k)dk + \int_{k=h-E_h-E_p}^{K_d} (b_{E_p}(M-F_n+C_{nf}-C_{13})+b(dC_{13}/dE_p))j(k)dk]f(h)dh$$

$$\int_{h=M-v}^{M+E_h} (\int_{k=M-E_p}^{(M-E_p)/g} (b_{E_p}(M-F_n+C_{nf}-C_{7r})+(1-b)(dF_n/dE_p)+b(dC_{7r}/dE_p))j(k)f(h)+$$

$$\int_{h=M+E_h}^{H} j(R_{13}+h-E_p-E_h)b(M-F_7+C_{7f}-C_{13})f(h)dh+$$

$$\int_{h=M-v}^{M+E_h} [j(M-E_p)(b(M-F_7+C_{7f}-C_{7r}))+(1/g)(j(M-E_p)/g)((1-b)(M-F_n+C_{nf}-C_{nr})]f(h)dh.$$

This unwieldy expression confirms that a change in E_p has a much more ambiguous effect. Personal property exemptions enhance the debtor's wealth but also endanger deficiency judgments. Specifically, the first three lines reflect the fact that larger personal property exemptions increase the chance that the debtor will default on his unsecured loans; note that we have assumed that $E_p<P$ so that the personal property exemption is always binding. This has three effects. The first effect is the same as that of a change in the probability of default caused by a change in E_h. That is, the mortgage creditor will now be faced with a debtor who is involved in legal proceedings but is more wealthy. The debtor's increased wealth is irrelevant unless the debtor decides to reaffirm the loan; this was not a problem with the homestead exemptions as the existence of equity in the home guaranteed that the debtor wanted to reaffirm the

loan. In addition, a change in E_p may now affect the debtor's willingness to repay his loans when the mortgagor is undersecured. If the debtor chooses to default on the mortgage creditor as well, the mortgagor will not be repaid in full. In addition, a rise in E_p will weaken the power of the mortgagor to seek a deficiency judgment which is reflected by the fall in D as E_p rises.

The next three lines mainly represent the effect of a rise in E_p to cause more bankruptcies. As stated when discussing a change in the homestead exemption, an increase in bankruptcy filings may be good for the secured component of the loan through superior foreclosure procedures ($F_7 > F_n$) and ($C_{7f} < C_{nf}$) and a greater ability of the debtor to reaffirm the mortgage. However, bankruptcy is bad for the unsecured portion of the loan, if it exists. That is, $D_n > D_7$ due to a lack of garnishment and an increase in E_p directly weakens the return to a deficiency judgment. Again, this was not an issue with the homestead exemption as a change in E_h only has an effect on the debtor's decision when the mortgage creditor is fully secured.

Last three lines represent the fact that the personal property exemption increases the total wealth that the debtor has available to repay his mortgage or repay his unsecured creditors in return for retaining possession of the home. As E_p rises, foreclosure becomes less likely. This may be especially important when the mortgage is undersecured but the debtor's private valuation exceeds the mortgage, $M-v<h<M+Q$. In this case, a debtor able to repay results in full repayment while foreclosure may result in a substantial loss.

Figure 1: Ch 7 Filing Rate in Mid-Atlantic Region; Difference and Ratio

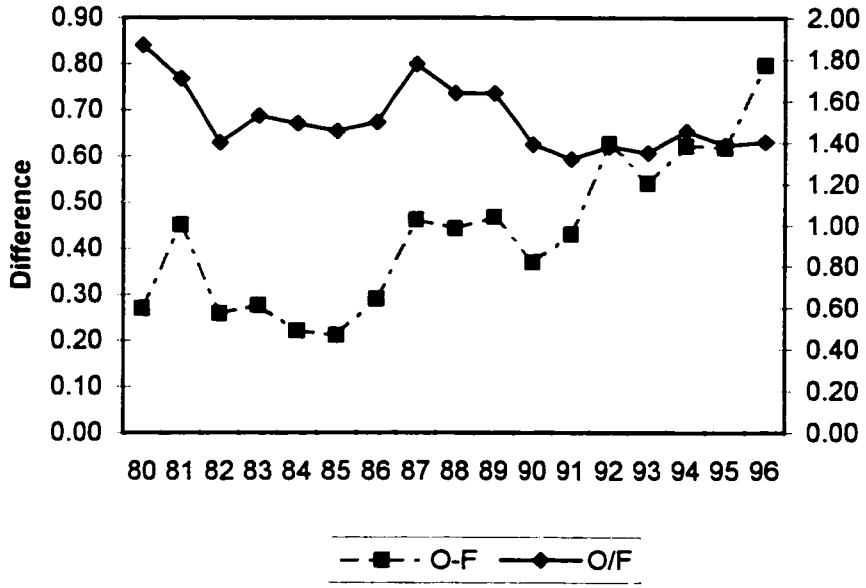


Figure 2: Total Filing Rate in Mid-Atlantic Region; Difference and Ratio

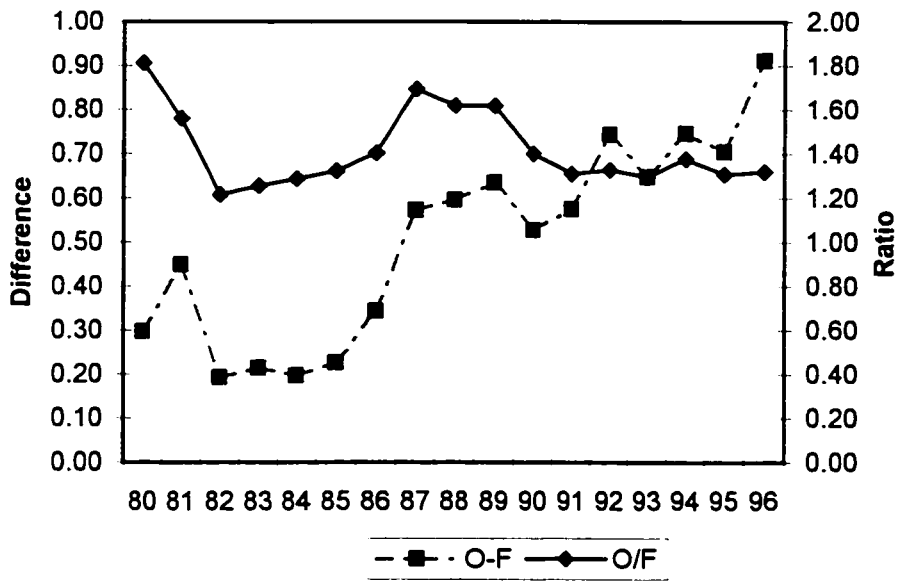


Figure 3: Ch 7 Filing Rate In Midwestern States; Difference and Ratio

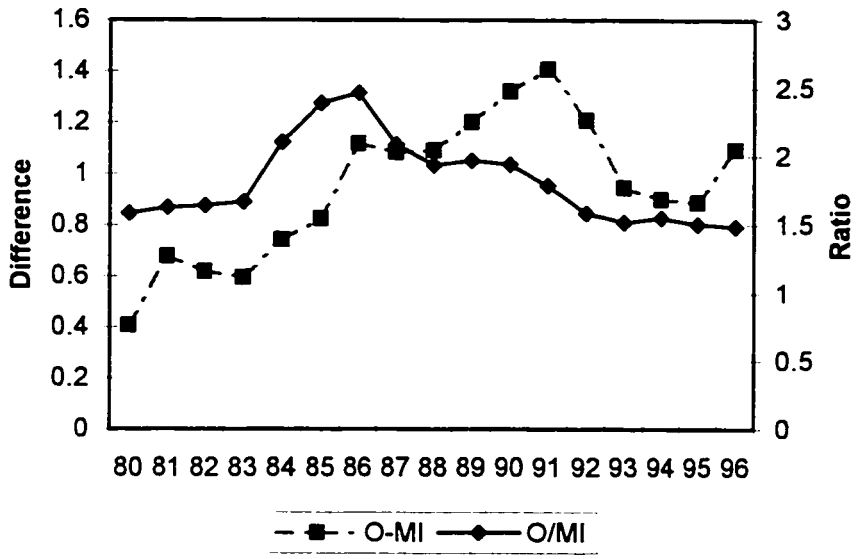


Figure 4 : Total Filing Rate in Midwestern States; Difference and Ratio

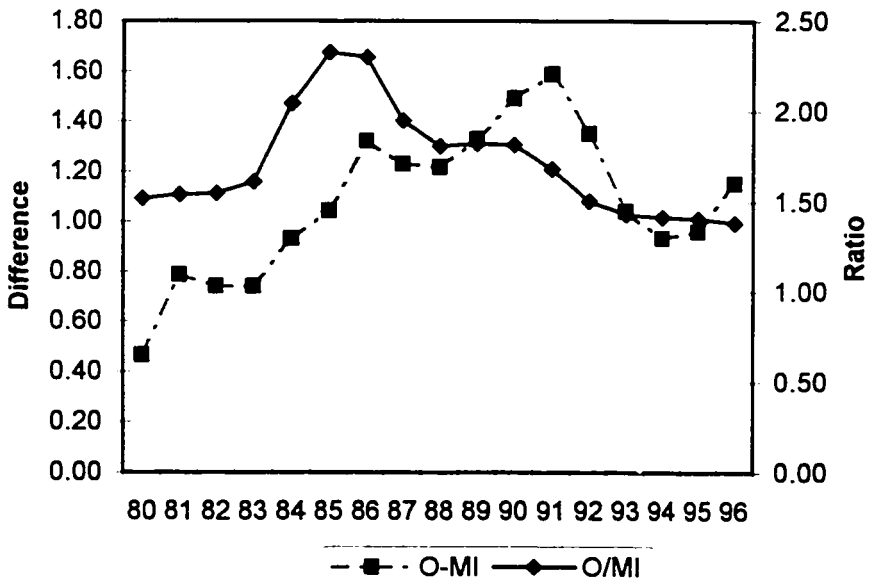


Figure 5: Ch 7 Filings as Portion of Total in Mid-Atlantic: O-F

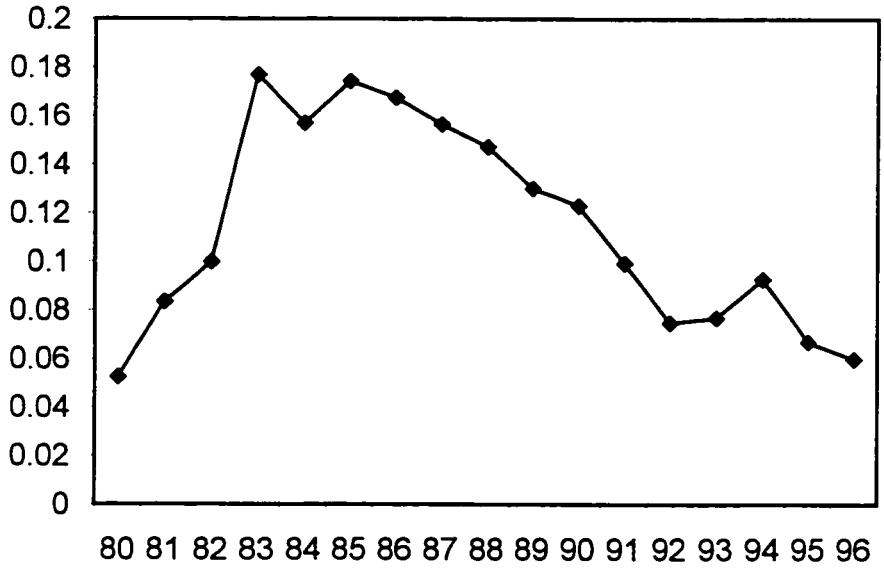
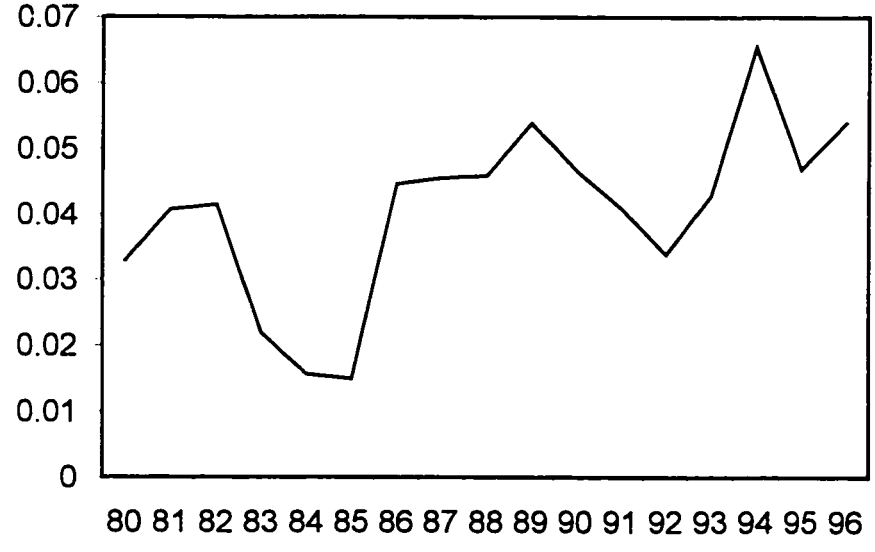


Figure 6: Ch 7 Filings as Fraction of Total in Mid-West: O-F



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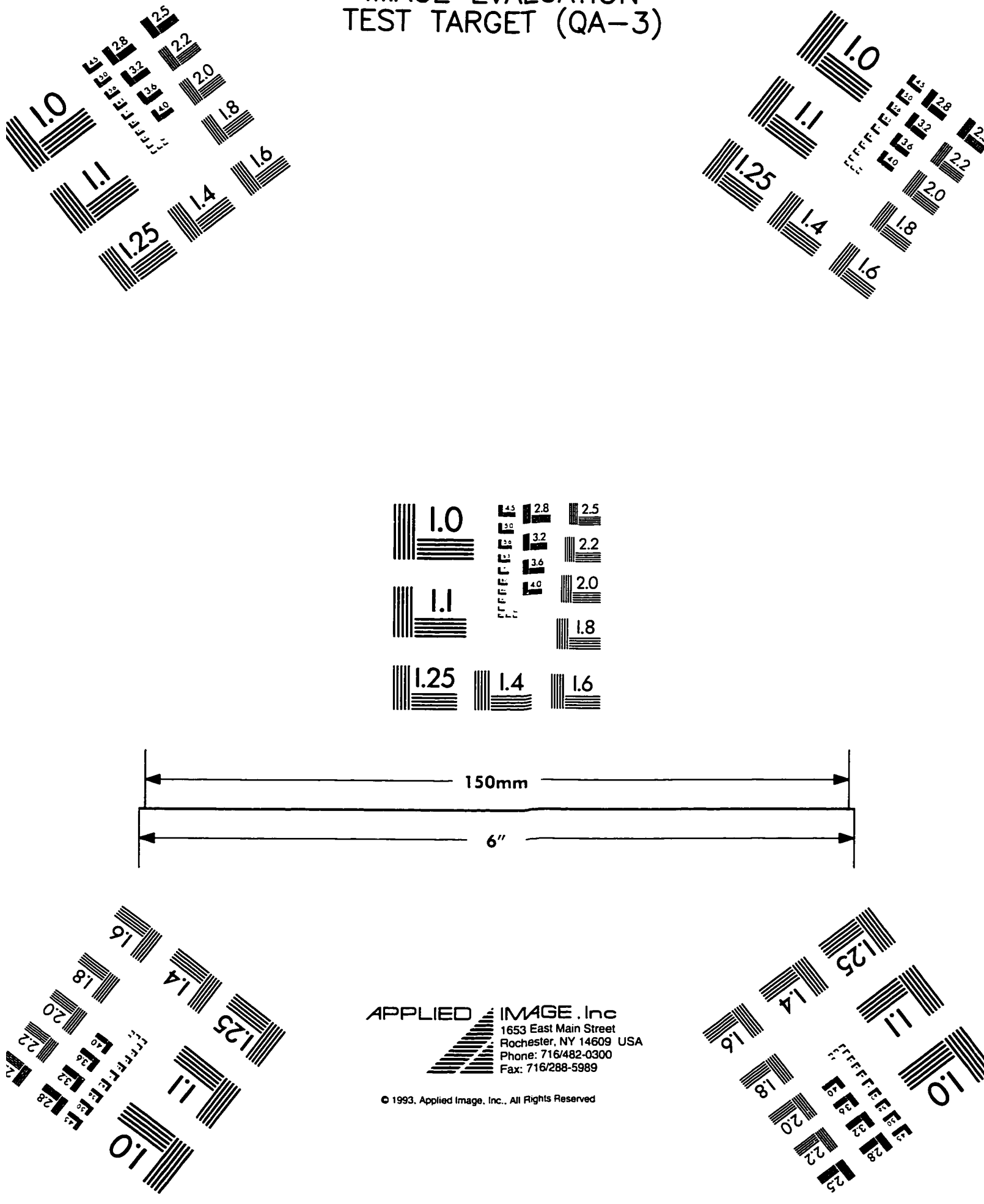
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