Medical Bills and Bankruptcy Filings

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Abstract

Using PSID data, we estimate the extent to which consumer bankruptcy filings are induced by high levels of medical debt. Our results suggest that nearly 27 percent of filings are a consequence of *primarily* medical debt, while in approximately 36 percent of cases medical debts co-exist with primarily credit card debts. Studying the post-bankruptcy scenario, we find that filers are 19 percent less likely to own a home even several years after the filing, compared to non-filers. However, the consequences are less adverse for medical filers i.e those who filed due to high medical bills compared to other filers.

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1. Introduction

In the 1990s, consumer bankruptcy filings as a percentage of total filings have been steadily increasing. In 1990, the number of filings was approximately 718,000 (92 percent of all filings), which doubled in 2004 to 1.6 million filings (accounting for 98 percent). What accounts for the "boom" in consumer bankruptcy? In the literature, there are two views about consumer bankruptcy filings. Rising household debt with increasing use of credit cards and rising mortgage payments which lead to accumulation of high-interest debt has been cited as an important explanatory factor. Some studies also suggest that sudden shocks to income in a situation of high consumer indebtedness may provoke a bankruptcy filing. Sullivan et al (1989) conclude that the primary cause of bankruptcy filings in their sample was unemployment or employment interruptions. A divorce, also, may create an unexpected shock to household income or reduce the economies of scale from living in a single household.

Second, the strategic view of bankruptcy advocates is that households file for bankruptcy because the financial benefit from filing has gone up. Under Chapter 7 personal bankruptcy, debtors in the US can retain some or all of their property from being used to repay creditors at the time of a bankruptcy filing. The amount of assets that they can protect depends upon the exemption level in the state of filing. Since the Federal Bankruptcy Code of 1978, every state in the US has been allowed to set its own property and homestead exemption levels.[1] Recently newspapers reported a surge in bankruptcy filings in anticipation of a change in the Personal Bankruptcy law, which would make it harder for households above a certain median income to file for Chapter 7 bankruptcy, and also placed a cap on the maximum exemption limit.[2] This seems to support the

strategic view of bankruptcy since it seemed that households were filing to take advantage of the higher exemptions associated with the older, more lenient system. Fay et al (2002) find support for this view which predicts that households are more likely to file when their financial benefit from filing is higher.[3] They use PSID data for the period 1983-1996 and find the coefficient on Financial Benefit to be positive and statistically significant. An increase of $1000 in households' financial benefit from bankruptcy is associated with a 7 percent increase in the probability of filing. On the other hand, health problems faced by the household head or spouse, spells of unemployment, and the household head being divorced in the previous year are positively related to bankruptcy filings, but not significant. Related to this view, Gross and Souleles (2002) used a dataset of individual credit card accounts to explain account holders' bankruptcy decisions. Their main explanatory variable is lenders' rating of individual account holders' riskiness and their main finding is that after controlling for increase in the average borrower's riskiness, the probability of default rose significantly between 1995 and 1997. They interpret this result as evidence that the stigma associated with bankruptcy has fallen.

This paper asks the question whether increasing health care costs are leading to a rising number of consumer bankruptcies, and if so, to what extent. The empirical evidence to this effect is contradictory. Studies based on surveys of bankruptcy filers, such as Himmelstein et al. (2005) using data from the Consumer Bankruptcy Project, claim that families with medical problems and medical debts account for nearly half of all bankruptcy filings.[4] However, their classification of a medical bankruptcy is too broad.[5] A big drawback of the study is that it does not include non-filers in the sample. This is a problem because there may be non-filers who experienced similar problems but did not

file for bankruptcy. Thus the sample lacks an effective control group. According to another survey, the *Health Care Costs Survey* (KFF, 2005), close to 23 percent of Americans had problems paying medical bills in the previous year.[6] Around 19 percent experienced other financial consequences due to medical bills, such as having to borrow money, being contacted by a collection agency, or even having to file for bankruptcy. Another study based on the Commonwealth Fund Biennial Health Insurance Survey (2005) reveals that an estimated 77 million (37 percent) Americans aged 19 and older have difficulty paying medical bills, have accrued medical debt or both.[7] Domowitz and Sartain (1999) find that "high" medical debt also contributes positively to bankruptcy, though credit card debt is the single largest contributor to bankruptcy filings at the margin. Medical debt is included in a binary form with a positive value indicating expenses in excess of 2 percent of income. This classification is arbitrary.[8] Further, the study is based on cross-sectional data and does not have demographic information. Thus it is unable to account for dynamic changes in household or state level conditions such as state incomes, unemployment rates etc.

The Office for United States Trustees (in the US Department of Justice), on the other hand, found that medical debt was not a major factor in the majority of bankruptcy cases filed in 2000.[9] More than 50 percent of filers reported no medical debt at all, while only 11 percent had medical debt in excess of $5000. Further, only in 5 percent of the cases was medical debt one-half or more of total unsecured debt. On average, medical debt was only about 6 percent of all unsecured debt. In comparison, credit card debt comprised about 40 percent of all unsecured debt. More than half the cases reported credit card debt in excess of 50 percent of all debt.

The contention in our paper is that while medical care costs are rising and are important in explaining bankruptcy filings, the economic impact is not as large as is being reported. In our dataset, we find that up to 27 percent (depending on the sample period) of all filings involve cases where medical bills were the *primary* form of debt. If we include all cases where there was *any* mention of medical debts, the number goes up (at most) to 36 percent. This percentage is on the high side since it includes those with primarily credit card, mortgage or car debt, who *also* accumulate medical debt. These numbers are significantly lower than the 50 percent claimed by Himmelstein et al (2005). They are closer to the 30 percent claimed by Domowitz and Sartain (2002) especially if we only consider primarily medical debt cases. We believe that a shortcoming with the earlier studies is that they are unable to isolate the impact of medical bills from other problems that the debtor faces, such as job loss, low earnings, and other credit card debts. This makes it difficult to conclude that high costs of medical care are *causing* the large number of bankruptcy filings. In this paper, we attempt to study the importance of various distinct factors, in particular other debts, such as credit card charges, that the household has incurred. We find that households with medical debts, *in addition to other debts*, are the most likely to file, while those with *primarily* high medical debts explain relatively few bankruptcy filings. We use household level data from the Panel Study of Income Dynamics (PSID) to estimate the impact of illnesses and medical debts on the probability of filing for bankruptcy. This is the first paper to use longitudinal household data to identify the impact of medical bills (and other health related factors) on bankruptcy. We extend our analysis to further study the post-bankruptcy situation for individuals. Using data on home ownership and labor supply in the PSID, we conclude

that individuals who have filed for bankruptcy are significantly less likely to own homes, while they are significantly more likely to increase labor supply to accumulate savings.

Medical problems can lead to bankruptcy in a number of ways. Health problems can cause individuals to lose work days, which results in loss of earnings. Medical bills can pile up, especially if the debtor does not have health insurance. In terms of costs of health care, Zywicki (2004) reports that there is little evidence that fluctuations in the cost of health care are linked to increases or decreases in bankruptcy rates. In fact, adjusting for inflation, he finds that during the 1990s there were some periods when health care costs went up only marginally, while bankruptcy rates rose by 20-29 percent. Results are mixed even when we study health insurance rates and bankruptcy. While the percentage of Americans without insurance has remained relatively stable, bankruptcy rates have been rising over time.[10]

In this paper, we incorporate into the model both the traditional factors associated with a bankruptcy and the strategic factors such as the exemption levels across states, which affect the financial incentive to file for bankruptcy. We further attempt to control for health related factors including medical coverage. The panel nature of the data allows us to control for all the factors leading to the bankruptcy, rather than focusing only on the period around the time of the bankruptcy. Further, we include in the sample both filers and non-filers, instead of including only people who have already filed. This enables generalizations of results to the larger population as well.

In the next section, we discuss the data and explanatory variables used in the analysis. Section 3 details the empirical methodology and Section 4 presents the

empirical results. Section 5 discusses the possible adverse effects of a bankruptcy filing. Section 6 concludes.

2. Data Source and Description

2. A Data Source and Summary Statistics

The data are available from the Panel Study of Income Dynamics (PSID), which is a longitudinal dataset tracking households since 1968. The PSID survey asks questions relating to demographic conditions as well as income, assets and debts of the household. In 1996, the PSID asked respondents whether they had ever filed for bankruptcy between 1996 and 1984, and if so, in what years and which state they filed. We use two panels of three years from this dataset. The first relates to the period 1994-1996. Since the PSID is a longitudinal dataset, we include in the sample all heads of household who were in the sample all three years. Each year there are approximately 6000 household heads who are interviewed, thus the overall sample size is 18,259 household heads. The bankruptcy filing rate among PSID respondents for the period 1994-1996 is approximately 0.4 percent, which is half the average national filing rate for that period of 0.8 percent. The number of filings in our sample is 74.

A problem with the PSID dataset is that it collects information on certain variables such as family wealth, asset and debt levels only every five years. Hence as a check on our results with the 1994-1996 panel, we pooled data across the three years 1984, 1989 and 1994 and re-ran the regressions.[11] The sample for this panel is 19339 household heads.

The PSID asks a detailed set of questions on bankruptcy. These include questions on the primary, secondary and tertiary reason for filing, given a list of possible reasons,

which include medical bills, job loss, injury or illness etc. The largest contributor to bankruptcy filings was high credit card debt. Nearly 42 percent of respondents reported high credit card bills as the primary reason for filing, while an additional 9 percent claimed it as the secondary reason for filing. Other big reasons were job loss (13 percent) and divorce or separation from spouse (12 percent). Only 9 percent of the sample claimed medical bills as the primary reason for filing, and 7 percent claimed it as a secondary reason. Illness and Injury accounted for only 6 percent of the filings. These statistics by themselves suggest the extent of bias in the recent Himmelstein (2005) paper, which claims that medical reasons are the leading causes behind bankruptcy filings, accounting for 50 percent of all bankruptcy filings. Unfortunately, we are unable to use responses to reasons for filing in the regression, because it is by definition, asked only of those who had actually filed for bankruptcy.

The PSID also asks questions relating to debt levels. A drawback of the PSID dataset is that while it gives information on the total value of debt, it does not provide information on each kind of debt separately. Thus, the key innovation in the paper is to distinguish medical debtors from other kinds of debtors, in order to study the impact of medical debt on the probability of filing for bankruptcy. To do this we exploit a part of the survey that has questions relating to loans taken by the household for various purposes. The survey asks individuals whether they had ever taken loans to repay their debts, and what was the largest component of the loan i.e what was *the* most important reason for taking the loan-possible reasons include repaying credit card debts, medical bills, car debts etc. They can also list other secondary or tertiary reasons for taking the loan. This is the main variable of interest, since it allows us to distinguish medical

debtors from credit card debtors, or people who had high car or mortgage debt. Hence we can classify households as medical debtors if they listed medical debts as their primary, secondary or tertiary reason for taking a loan. We can further classify households as *primarily* medical debtors if they listed medical debts as their *primary* reason for taking the loan. This should help clarify the issue of whether medical debts are the largest component of debt for households that file, or is it mainly other forms of debt, such as credit card debt, that is primarily responsible for a large number of filings.

Other relevant variables available from the dataset relate to the health status of the individual, whether they missed any weeks of work due to illness, whether they had medical coverage, etc.

Table 1 presents sample summary statistics. In terms of demographics, about 70 percent of the population is male, and around 63 percent white. The average annual family income is $43,000, while average annual debts are $4500. The bankruptcy filing rate is 0.4 percent. To distinguish between filers and non-filers, we present separately the statistics for each group in Table 2. In the sample, around 66 percent of filers are male, and more than 60 percent are white. Close to half are married. About 47 percent had medical coverage and 10 percent had experienced unemployment spells in the previous year.[12] About 40 percent were homeowners while 15 percent owned businesses. Surprisingly, there do not appear to be systematic differences in these demographics between filers and non-filers, as shown in Column 2 of Table 2.

If we look at correlations between bankruptcy and household conditions, we found no significant correlations between bankruptcy filings and individuals with medical coverage (.013), individuals in poor health (.003) and individuals who were unemployed

(.007). All kinds of loans taken to repay debts, such as medical debts, credit card debts, mortgage payments or car loans are positively correlated with bankruptcy filings. There is also a positive, though not large correlation of .108 between those with credit card loans and those with medical loans. Further, there is a positive correlation between filings and state tax rates, state unemployment rates and state exemptions.

Figure 1 profiles the average bankruptcy filer. Graphs show that the average filer is more likely to be a white male, less than 45 years of age, unmarried and with less than 16 years of education.

2. B Explanatory Variables

We explain bankruptcy filings as a function of household debt and income levels, the proportion of debt that is medical, the bankruptcy exemption level in the households' state of residence, the other expenditures that the household has to meet such as rent or mortgage payments and whether the household faced any health problems. We are also able to control for demographic variables.

DEBT refers to all unsecured debt which includes credit card debt, medical debt, personal loans, etc. Information on this variable is available only once every five years in the PSID. For the 1994-1996 sample, we use the 1994 data on unsecured debt as the total debt. For the other panel, we do not face this problem since questions are asked in 1984, 1989 and 1994. In the regression analysis, we scale this variable by total family income to assess the impact of debt as a fraction of income. FAMILY INCOME refers to all wage and salary income earned by the household during the year. Since family income varies for each year in the sample, dividing DEBT by family income serves the purpose of introducing variation in the DEBT variable over time.

WEALTH or the sum of all assets for the household (excluding home equity) is again available only in the 1984, 1989 and 1994 supplements. To this we add the house value, which varies every year, to construct the variable that is used in the analysis.

MEDICAL refers to all households who reported taking a loan to repay medical debts.[13] MEDICAL1 refers to those who reported medical debts as the primary reason for taking a loan. This is interacted with DEBT, giving us the variable MEDDEBT, to isolate the effect of medical debt on bankruptcy. MEDDEBT1 is the subset of people within MEDDEBT who reported medical debts as their most important reason for taking a loan. Thus, MEDDEBT1 includes only those who reported medical debts as their *primary* reason for taking a loan while MEDDEBT includes anybody who reported medical debt as a reason-whether primary, secondary, or tertiary-for taking a loan.[14] Table 2A and Figure 2 track changes in the number of medical debtors, and the number of bankruptcies over time. As Figure 2 shows, there is co-movement of bankruptcy filings and medical debtors, and also individuals reporting poor health. This is particularly true for the period 1994-1996.

MEDCOVER is a dummy variable equal to 1 if the household had health insurance coverage. The questions on health insurance coverage in the PSID are not comprehensive. The question asks whether the family is covered by Medicare, Medi-Cal, Medical Assistance, etc, but does not clearly ask whether the individual had private insurance either through the employer or self-purchased. Thus the statistics on the number of insured turn up an extremely low number of 10 percent. To supplement this information, we consulted a Consumer Population Survey Report on Health Insurance coverage (1995) and a report prepared by the American Hospital Association (1996) on

trends in employer coverage. These suggested that union members, workers in certain industries such as mining and manufacturing, and occupations such as professional or technical workers, and full-time workers were more likely to be covered. Hence we assigned the MEDCOVER variable a value of 1 if any of these criteria were satisfied. With this new variable, the coverage number went up to 61 percent. This is the variable we use in Table 3. [15]

The variable MEDICAL*UNEMPLOYED is assigned a value of 1 if the household could be classified as MEDICAL (as defined above), and the household head was also unemployed for a period of time in the previous year.

We control separately for the effect of poor health conditions, by including a variable BADHLTH. The survey asks the household head whether he considers his health to be (1) Excellent (2) Very Good (3) Good (4) Fair (5) Poor. We construct a dummy variable that takes on the value 1 if the survey response is (5). This variable is interacted with DEBT to study if individuals experiencing poor health and indebtedness are more likely to file.

EXEMPTION refers to the dollar amount of bankruptcy exemptions that the household may take in its home state. We use the homestead exemption as well as the personal property exemption. The homestead exemption is an exemption for equity in owner occupied housing. For example, in 1996 the homestead exemption in Alabama was $10000, while in Arizona was $100,000. Most states also have exemptions for household belongings, equity in vehicles, retirement accounts, and a wildcard category that can be applied to any type of asset. The exemption levels have changed over time in many

states. This data is available from various editions of Elias et al, *How to File For Chapter 7 Bankruptcy*.[16]

RENT refers to the annual rent or mortgage payment that the household pays. MISSED WEEKS refers to the number of weeks of work that the household head missed in the previous year due to illness. State (Maximum Marginal) Income Tax Rates (available from National Tax Foundation), Unemployment Rates and Per Capita Incomes (Bureau of Labor Statistics) are put in as additional controls for macroeconomic and business conditions, apart from the demographic variables like age, sex, marital status etc of the household head.[17]

3. Empirical Methodology

We use a probit model to explain the probability of bankruptcy filing by a household at time *t*. Our model can be specified as:

$$Y_{it}^{*} = \delta_0 + \delta_1 D_{it1} + \delta_2 D_{it2} + \ldots + \delta_{49} D_{it49} + t_{95} + t_{94} + X_{it} B_1 + \varepsilon_{it} \; ; \; i=1,..,N, \; t=1..T \qquad (3.1)$$

$$Y_{it}=1 \text{ if } Y_{it}^{*} > 0$$

$$Y_{it}=0 \text{ if } Y_{it}^{*} \leq 0$$

for household i in year t.

Our latent variable is Y_{it}* and the observed dependent variable is Y_{it}. Y_{it} relates to a household *i's* decision (for expositional purposes) to file for bankruptcy in year *t*. The dataset identifies the state in which the household filed for bankruptcy. Thus we are able to assign every household to a particular state and look at the appropriate state-level variables, such as bankruptcy exemptions, tax rates etc. $D_{it1}....D_{it49}$ are state dummies and t_{95}, t_{94} are year dummies. B_1 refers to the vector of coefficients associated with the explanatory variables included in X_{it}. ε_{it} is a random error term. Standard errors are

corrected using the Huber/White procedure, which allows error terms to be correlated over time for the same household.

4. Empirical Results

4.A. Probit Estimation

Table 3 presents the marginal effects from a probit regression, using cluster analysis which allows for error terms to be correlated for the same household over time. All regressions use PSID weights to make the sample representative of all families in the US. Table 7 uses the marginal effects to illustrate the economic significance of the relevant variables.

Specification 1 (Column 1 of Table 3) shows results for demographic variables, household income, asset and debt values. The effect on bankruptcy filings of being MALE, WHITE or MARRIED for heads of household is positive, but not significant. Individuals are significantly more likely to file at relatively younger ages. This is also clearly brought out in Figure 1, where individuals less than 45 years of age have higher filing probabilities. More educated people are less likely to file, and this result is similar to Fay et al (2002). The marginal effect of an additional year of education is to lower the probability of a bankruptcy filing by .03 percentage points. Dividing this by the average probability of filing in our sample, which is .4 percent, Table 7 shows that the number of bankruptcy filings would decrease by 7.5 percent a year.[18] To draw conclusions from this for the general population based on 1.3 million bankruptcy filings in 1999, this implies that an additional year of education would lead to 97,500 fewer bankruptcy filings in a year.

The likelihood of filing is significantly higher if the head owns a business *(p=0.80),* and is increasing in the number of children in the household. As would be expected, high family wealth is significantly negatively associated with the probability of filing. An increase in family wealth by $1000 would cause nearly a 1 percent drop in the bankruptcy filing rate, or approximately 10,000 fewer filings per year (Table 7).

Apart from MEDICAL, to adequately control for the effect of other health related factors on the probability of filing, we include a number of variables. We include a measure of weeks of work missed due to own illness, MISSED WORK.[19] This coefficient is positive and significant in all specifications, suggesting that losing work days due to illness is associated with lost earnings or job loss, which in turn may cause strain on the household finances leading to bankruptcy. In terms of economic significance (Table 7), an additional week of missed work would cause the predicted probability of filing to increase by 2.5 percent-an additional 32,500 filings per year.[20] We also control for the fact that the household may have medical insurance, MEDCOVER. As may be expected, households with medical insurance are less likely to file for bankruptcy, though the effect is not statistically significant. None of the other papers use this variable as a control. Finally, we test to see if having medical problems *and* being unemployed is a significant predictor of bankruptcy filings. However, while the sign on the coefficient is positive, it's not statistically significant.

The main question that this paper seeks to answer is to what extent do medical bills contribute to bankruptcy filings. Thus in Specification 1, we include MEDDEBT along with DEBT and DEBTSQ (debt squared). We scale each of these variables by Family Income. The marginal effect associated with MEDDEBT is positive and

significant.[21] We find that a 10 percent increase in medical debt (as a fraction of income), would lead to a 20 percent increase in the probability of filing for bankruptcy.[22] In terms of the 1999 bankruptcy filing rate, this would imply an additional 260,000 filings per year. It is worth pointing out here that MEDDEBT includes people who took loans primarily to pay off credit card debts, car debts or mortgages, but who also listed medical debts as a reason for the loan. Between 1994-1996, the number of people who took loans primarily to repay credit card debt went up from 406 in 1994 to 439 in 1996. Out of these only 28 in 1994 and 31 in 1996 claimed medical debts as well. The number who reported any medical debt went up from 91 in 1994 to 98 in 1996.

The coefficient on DEBT (as a fraction of income) is positive as may be expected, while the coefficient on DEBTSQ is negative and significant, suggesting that at certain very high values of DEBT, the probability of filing may go down.[23]

Including other macroeconomic state-level variables also yielded significant results. The coefficient on state bankruptcy exemptions is positive, but not significant.[24] This tends to erode support for the strategic view of bankruptcy, since if individuals were filing simply to take advantage of the higher exemptions, we would expect this coefficient to be significant.

In terms of current expenditures, taxes and rent form a large fraction of all monthly payments. Therefore it's important to control for them in the regression analysis. The coefficient on both of these variables is positive and highly significant. A 0.1 percent increase in state tax rates would cause filings to rise by 16 percent, while a $1000 increase in annual rent or mortgage payments would cause filings to rise marginally by 0.1 percent.

Finally, we also include State Unemployment Rates. The larger the unemployment rate in the state, the larger the number of filings. A 0.1 percent increase in unemployment rates would cause filings to rise by 97,500 per year. State per capita income, PCI, is positive but insignificant.

The coefficients on these state-level macroeconomic variables and the above mentioned demographic variables are similar across different specifications. Therefore we do not refer to them again when we discuss different specifications. Instead we will focus only on the relevant variables of interest.

In Specification 2, we include (instead of MEDDEBT) as the explanatory variable, MEDDEBT1. Recall that MEDDEBT1 is DEBT interacted with MEDICAL1 i.e it's the debt level for those individuals who claimed medical debts as their *primary* reason for taking a loan. The marginal effect for this variable is positive and significant. A 10 percent increase in medical debts for these households would cause only a 0.5 percent increase in the bankruptcy filing probability, or an additional 6500 filings. Comparing the results on MEDDEBT and MEDDEBT1, the picture that emerges is not one of medical bills *driving* individuals to bankruptcy, but medical bills *in addition* to other debt problems that the household is already facing.

In Column (3), we interact BADHLTH with DEBT (scaled by Family Income), and use that instead to capture the effect of debt on households with medical problems. The estimated marginal effect is the same as the one associated with MEDDEBT1 in Column (2). This suggests that our measure of medical debtors comes close to what we're trying to capture. Surprisingly including BADHLTH as an additional explanatory variable in Columns (1) and (2) does not yield a significant coefficient. Thus already

indebted households with health problems are more likely to file than households with health problems and no major debts.

A concern with specifications (1)-(3) in Table 3 is that we may be biasing downwards the impact of medical debts on bankruptcy. This arises for two reasons. First, our DEBT variable does not change across the three years, so effectively MEDDEBT is capturing the effect of changes in income (the scaling variable), rather than debt, on bankruptcy probabilities. Secondly, as mentioned earlier, there is not much change in the number of people taking loans for medical reasons between any two years. Hence as a check on our results, we re-estimated the regression model using only the years 1994 and 1996 (Column (4)). While this does not get around the first problem, it does lead to greater variation in MEDICAL, allowing for better estimation. As we suspected, there was a significant increase in the estimated coefficient on MEDDEBT-the marginal effect rose to 0.011 (p-value=0.022) (from 0.009) i.e a 10 percent increase in medical debts would cause a 27.5 percent increase in the probability of filing. A similar re-estimation of MEDDEBT1 did not yield a significant coefficient, possibly due to the limited observations in MEDICAL1. The next section improves on this estimation by pooling together years for which there is data on DEBT levels. Moreover, by looking at data over longer periods of time, it allows more variation in the data, leading to better estimation.

4.B. Alternative Specifications and Checks

Table 4 replicates the estimation procedure described previously for a different period of time to check for robustness of results. We pool three years-1984, 1989 and 1994. The choice of years is dictated by the fact that questions relating to family wealth and debt levels are asked only in these years. Thus by pooling across these years, we are

actually able to control for changes in the debt and asset levels. There is however, some loss of uniformity in the way the questions are asked, and we are unable to get good responses for certain variables such as rent or mortgage payments, and medical coverage. Thus we present results for this panel with less than the full set of variables we had in Table 3. We further allow all state effects to be captured by the state dummy variables.

It is comforting to note that our main results do not change. Both MEDDEBT and MEDDEBT1 enter the regressions positively and with significant marginal effects. However, the size of the marginal effects is significantly larger. The effect of a 10 percent increase in MEDDEBT is to increase the probability of a filing approximately by 36 percent, while a corresponding increase in MEDDEBT1 increases the probability by 27 percent. These results could be driven by the relatively longer time period that is involved, allowing for more variation in the right hand side variables. We are effectively studying changes over five year periods rather than 1 year periods. Moreover, unlike the 1994-1996 panel, our DEBT variable does vary in these three years since information on DEBT is collected in all these years. Thus these numbers should be closer to the true values compared to the estimates for 1994-1996.[25] Judging by these numbers, medical debts could be held *responsible* for at most 27 percent of all bankruptcy filings. If we take any mention of medical debts in conjunction with other debt variables as the predictor variable, the number is clearly higher at 36 percent. However, all that this implies is that medical debts, like any other debt, increase the probability of a bankruptcy filing, but they are not the *major* factor behind the filing.

In column (3), we defined BADHLTH more broadly to include not only instances where the head of household reported being in poor health, but also instances where other

family members were reported to be in bad health. The coefficient on this variable is positive and significant suggesting that medical problems faced by family members are equally important in predicting bankruptcy filings. If we include only cases where the head was described as being in poor health, the coefficient does not turn up significant.

These results also carry forward to the case when we estimate the probability of filing for bankruptcy using Cox's Proportional Hazard Model (Table 5). The Cox model estimates the determinants of the probability of bankruptcy. The model relates the hazard rate *h(t)* (the probability of filing bankruptcy at time *t*, conditional on not having filed bankruptcy uptil time *t*) to a set of observables *X*:

$$h(t) = h_o(t)\exp(X'\beta)$$

Where $h_0(t)$ is the baseline hazard rate at time *t* for the covariate vector set at 0 and β is a coefficient vector. This semi-parametric estimator assumes that the hazard ratio $h(t)/h_0(t)$ is constant over time and requires no assumptions about the baseline hazard.

The results confirm the results of the probit regressions. The coefficients on MEDDEBT (hazard ratio=2.34) and MEDDEBT1 (hazard ratio=1.024) are positive and significant. The coefficients indicate that the estimated hazard or risk of filing for bankruptcy increases by 1-2.5 times if an individual has medical debts, after adjusting for the effect of other variables in the model.

Since the PSID data has several limitations in terms of uniformity of questions across years, to assure ourselves of the robustness of results, we did cross-section regressions as well. We present the results for the year 1994 in Table 6. In any particular year, there is adequate cross-sectional variation in debt levels and total family incomes, to allow identification of coefficients on medical debts. We classify medical debtors in the

usual way. The number of observations drops to about 6500, but even with this limited sample size, the estimated marginal effect on MEDDEBT is 0.017 (*p-value=0.051*), which is similar to what we had before.[26]

To summarize, our results indicate that the effect of a 10 percent increase in MEDDEBT would be to increase total filings by about 36 percent. However, if we include only those individuals who claimed medical debt as their primary reason for taking a loan, for this group the probability is about 27 percent. Note that MEDDEBT includes people who may have other forms of primary debt, such as credit card, car or mortgages, but who also have some medical debt. Hence if we look at this variable alone, we are overstating the impact of medical debts on bankruptcy filings. The more relevant variable to see if bankruptcies are being *driven* by medical debts, is MEDDEBT1. This captures individuals with primarily medical debt. Thus we can conclude that medical debts are primarily responsible for 27 percent of all bankruptcy filings. Note that this is still much smaller than the percentage reported by Himmelstein et al (2005) of 50 percent and that reported by Domowitz and Sartain (1999) of 30 percent (for high medical debts). This is, however, higher than that reported by the Office for United States Trustees (in the US Department of Justice), which found that only 11 percent of households that filed for bankruptcy, had medical debts in excess of $5000-approximately 17 percent of average income for the year 2000.

5. Economic Consequences of Bankruptcy Filings

The key feature of the modern U.S. personal bankruptcy law is to provide debtors a financial fresh start through debt discharge. However, surveys of bankruptcy filers reveal that filers experience financial hardships, such as reduced access to credit, as a

result of a bankruptcy record. Empirical evidence in this regard is scant. Musto (2005) demonstrates that the removal of a Chapter 7 bankruptcy record from an individual's credit report leads to a substantial increase in the number and aggregate limit on cards offered to the individual. Long (2005) presents evidence to suggest that a household with a bankruptcy record is about 30 percent more likely to lose home ownership. Han and Li (2004) estimate the effect of personal bankruptcy filings on labor supply using data from the PSID. They find that filing for bankruptcy does not have a positive impact on annual hours worked by bankrupt households.

In this paper, we assess the impact of bankruptcy filings on homeownership, average hours worked by the household head, and access to health insurance coverage. We further study whether these effects are persistent or tend to die down after a period of time, and whether there are differential effects of medical bankruptcy filings as opposed to other reasons for filing. Our results indicate that there are significant negative effects of having a bankruptcy record and these effects tend to persist, even over a ten year period.

Results presented in Table 8 indicate that a previous bankruptcy filing has a significant negative impact on home ownership. The variable LAGGED BANKRUPT is a dummy variable equal to 1 which indicates that the individual had filed for bankruptcy at some point prior to the period under study i.e 1994-1996. Unlike Long (2005), our sample does not only include home owners, but all household heads whether or not they owned a home. Including all of the controls used in previous regressions, and allowing for state and time dummies, our results indicate that having a bankruptcy record lowers the probability of home ownership by about 10.5 percentage points. Given the average

home ownership rate of 55 percent, this translates approximately to a nearly 19 percent drop in the probability of home ownership. This drop in home ownership could be attributed to reduced access to credit as a result of having mortgage applications turned down. As Long (2005) points out, households interviewed in the 2001 Survey of Consumer Finances listed bad credit history as the main reason for why their credit applications had been rejected. From the PSID, it is possible to get information on why individual's had their mortgage applications rejected. However, this information is only available for some years. Nonetheless, we regressed the probability of a mortgage application being turned down if one had filed for bankruptcy before. The probability of being turned down (due to credit history problems, or low, unstable income) *if one has filed for bankruptcy before* is positive, though significant at about 15 percent.

We were interested in studying if the negative consequences of bankruptcy filings were somehow different for medical filers versus other filers. The PSID asks bankruptcy filers to provide a reason for the filing. A list of possible reasons could include medical debts, credit card debts, job loss etc. By medical filers, we mean those individuals who gave their *primary reason for filing* as medical bills. Our hypothesis is that if bankruptcy filings are induced by a sudden short-term increase in debts as a result of an illness, in the long run (the period after the filing), the income-debt levels would stabilize faster than for other filers. This would mitigate the negative effect of the filing for this group of debtors. Therefore, in Table 8, we study the effect on home ownership of medical filers, credit card filers and filers who had experienced job losses. The estimated marginal effect is barely significant at 10 percent for medical filers, while it is highly significant at 1 percent for credit card filers and job-loss filers. Hence our results suggest that the

probability of owning a home after bankruptcy is significantly lower for certain kinds of filers, as opposed to others.

Following Han and Li (2004), next we model the effect of bankruptcy filings on labor supply. The underlying assumption behind the notion of debt discharge incorporated in U.S. personal bankruptcy law is that discharge of debt will give the individual a fresh start after bankruptcy. It will preserve the incentive to work and therefore encourage human capital formation. We test for this by regressing average hours worked per week by the household head on whether the individual had filed for bankruptcy previously, using a Random Effects GLS model. Unlike Han and Li (2004), we find that the lagged bankruptcy filing dummy enters positively and significantly in the regression, with p-value equal to 0.001. Contrary to their theoretical predictions, we find that individuals respond to a filing by increasing their supply of labor and working longer hours. Intuitively, this can be explained by the fact that their access to credit is lowered after the filing, hence there is an incentive to work and save more, to insure against other eventualities. These results hold if we consider credit card filers (*coefficient=2.65, p-value=0.049*), but there is no significant increase in the case of medical filers. Hence, once again, our results suggest that there are less significant impacts of bankruptcy filings for medical debtors.[27]

Finally, we wanted to study whether the impact of a filing is most severe in the immediate aftermath of the filing, or does it persist over time. Our results indicate that there is persistence over time. We defined a dummy LAGGED BANKRUPT90 which includes only those filings that occurred between 1990-1994, not including 1994. Similarly, LAGGED BANKRUPT84 includes all those cases where filings occurred

between 1984-1994. The former captures the short-term impact of the filing on home ownership and labor supply, while the latter captures the long-term impact. As the table shows, the coefficient on home ownership is not significantly different for the two cases. This is also true for average hours worked. Thus the negative consequences of bankruptcy filings appear to last for long periods of time.[28]

Summarizing the results in this section, we find that having a bankruptcy record significantly lowers individual's ability to own homes. This effect is most significant for individuals who filed due to high credit card debt or because they experienced job losses. The results are less significant for medical filers. We justify this finding on the assumption that medical filers are more likely to be those who experienced a one-time adverse event, but have steady income-debt levels otherwise. This may reduce problems of credit access for them. Hence they are able to recover faster from a bankruptcy filing, as opposed to credit card debtors with more persistent debt and income problems. This could also explain our findings on hours worked by individuals. In general, a bankruptcy filing induces longer work hours per week compared to non-filers. This result holds most strongly for credit card filers. Finally, we find that the effects of a bankruptcy filing persist over time.

6. Conclusion

In this paper, we estimate a model of the household bankruptcy filing decision, using PSID data for the period 1994-1996 and a three year panel covering the years 1984, 1989 and 1994. The main aim in the paper is to test whether medical debts can be ascribed as the leading cause of bankruptcy filings. To this end, we first developed a classification of households into medical and other debtors. Then we regressed the

probability of bankruptcy on medical (and other) debts using a probit model and a hazard model. The study finds that while medical debts are significantly related to bankruptcy filings, the magnitude is not as high as is claimed by other authors.

We do not find support for the view that medical debts are the *leading* cause of bankruptcy filings. In fact, households who are most likely to file are those with *primarily* other forms of debt, such as credit card or car debts, who *also* incur medical debts. Altogether, a 10 percent increase in debts of these households would cause bankruptcy filings to go up by 36 percent on average. A 10 percent increase in debts of households with *primarily* medical debts would cause filings to go up by 27 percent on average.

We find support for the non-strategic adverse events view of bankruptcy. In support of the latter, we find that an adverse event such as losing work days due to illness significantly increases the likelihood of filing. The paper also draws attention to other expenditures incurred by the household that are important in the filing decision, such as rents (or mortgages payments) paid per year or the amount of taxes paid (proxied by state tax rates). Macroeconomic conditions like state unemployment rates etc. are also highly significant and are positively linked to bankruptcy filings.

Our study also documents post-bankruptcy impacts on filers. We find that filers are significantly less likely to own homes. They are more likely to work longer hours to make up for the reduced credit access after bankruptcy. These effects persist for long periods of time, and are less significant for medical filers.

Table 1

Sample Summary Statistics: 1994-1996 panel

	Mean	Std. Error
Head Age	44.87	16.50
White	.623	.484
Head Married	.512	.499
Head Own Business	.094	.292
Total Family Income	42264.46	51222.29
Male	.678	.467
Own House	.576	.494
Bankrupt	.004	.061
Medical Coverage	.605	.488
People with Poor Health	.053	.225
Length of Unemployment spell	1.13	5.61
Monthly Rent Payments	1099.29	9992.89
Total Debt (1994)	4495.05	19645.02
Monthly Mortgage Payments	553.46	6127.17
House Value	194203.5	1155690
Wealth (1994)	77215.53	301024.4
Bankruptcy Exemption[2]	69396.35	77776.79
Unemployment rate[3]	6.12	1.28
Per Capita Income[4]	21841.38	3016.29
Tax Rate[5]	5.41	2.92

[2] Data available from Elias et al, *How to File for Chapter 7 Bankruptcy*, various editions
[3] Data available from Bureau of Labor Statistics
[4] Data available from Census
[5] Data available from National Tax Foundation

Table 2: Profile of Filers and Non-Filers (percent)

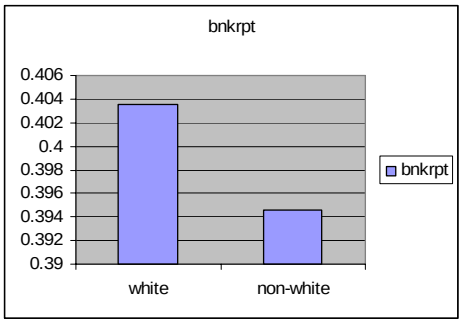
1994-1996 Panel

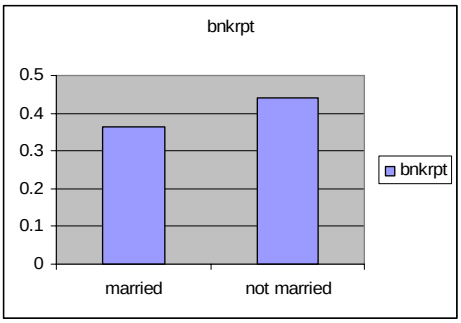
	Filers	Non-Filers
Male	65.8	68
White	63.5	62.3
Married	47.0	51.2
Own Business	15.2	9.4
Own House	36.4	58
Medical Coverage*	47.0	60.6
Unemployed	10.5	7.5

*This variable is constructed using identifiers discussed in the text.

Figure 1: Who is More Likely to File: Demographics of Bankruptcy Filers[6]

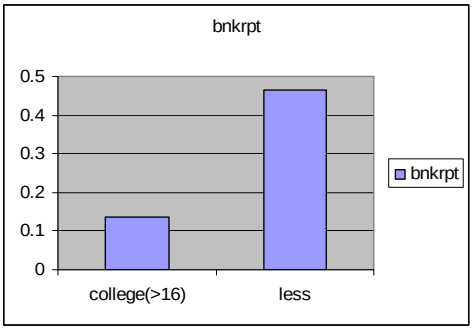
1994-1996 Panel

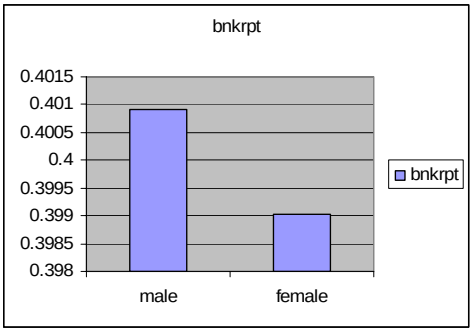




White people more likely

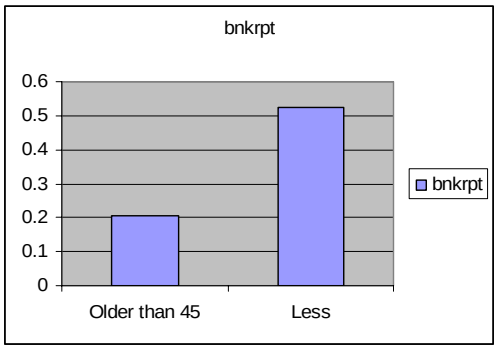
Unmarried more likely





Less Educated more likely

Males more likely



Younger more likely

[6] The numbers represent the percent of filers within each category. For example, WHITE represents the proportion of WHITE Bankrupts out of all WHITEs.

Table 2A: Tracking Health Shocks

1994-1996 Panel

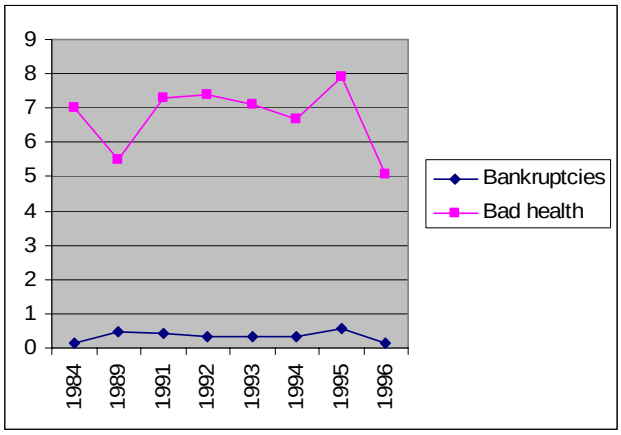
Year	Bankruptcies (percent)	Bad health (percent)	Medical Debt/Income (percent)	Average Family Income	MEDICAL1 (Number who claimed medical debts as the primary reason for taking a loan)	MEDICAL (Number who claimed medical debts as the reason for taking a loan)
1994	0.44	5.39	0.21	41663.05	34	69
1995	0.51	5.25	0.31	43301.91	36	72
1996	0.19	5.32	0.24	44531.26	38	73

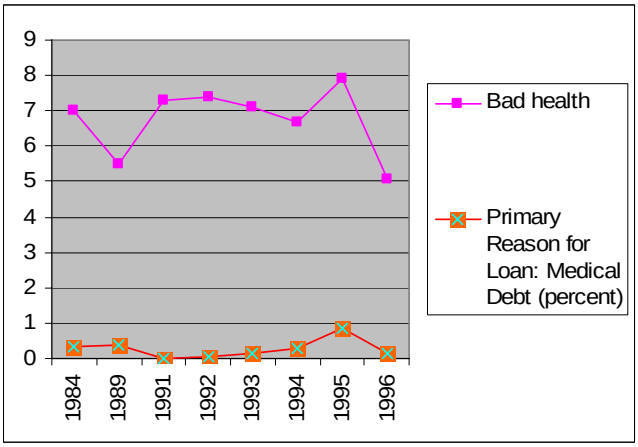
1984-1994 Panel

Year	Bankruptcies (percent)	Bad health (percent)	Medical Debt/Income (percent)	Average Family Income	MEDICAL1 (Number who claimed medical debts as the primary reason for taking a loan)	MEDICAL (Number who claimed medical debts as the reason for taking a loan)
1984	0.11	7.0	0.07	24100.54	22	46
1989	0.42	5.5	0.12	33181.01	31	59
1994	0.35	6.6	0.18	39595.28	38	75

Note: Summary statistics for the year 1994 vary across the two panels due to differences in sample size and observations used.

Figure 2: Bankruptcies, Bad Health and Medical Loans





Note: These graphs include some years that are not part of the sample used in the regressions.

Table 3

Probit Results Explaining Household Bankruptcy Filings: Marginal Effects:1994-1996

	(1) 1994-1996	(2) 1994-1996	(3) 1994-1996	(4) 1994 and 1996
Age	0.0003	0.0002	0.0002	0.0001
	(.105)	(.203)	(.149)	(.562)
Age Square	$-4.54ex10^{-6}$	$-3.82x10^{-6}$	$-4.39x10^{-6}$	$-1.84x10^{-6}$
	(.038)	(.075)	(.050)	(.408)
Male	.0003	0.0007	0.0004	0.0006
	(.800)	(.574)	(.719)	(.673)
White	0.0009	0.0008	0.0008	0.0017
	(.467)	(.473)	(.499)	(.261)
Education	-0.0002	-0.0003	-.0003	-0.0002
	(.203)	(.130)	(.127)	(.419)
Married	0.0008	0.0005	0.0005	-.0013
	(.607)	(.734)	(.700)	(0.455)
Number of Children	.0003	.0004	.0004	0.0008
	(.360)	(.243)	(.237)	(.106)
Own Business	0.005	0.0049	0.0048	0.004
	(.080)	(.079)	(.082)	(.205)
Wealth(‘000)	-.00003	-.00003	-.00003	-.00004
	(.002)	(.006)	(.000)	(.000)
Own House	0.0007	0.0004	0.0004	0.001
	(.647)	(.777)	(.759)	(0.485)
Medical Coverage	-0.0014	-0.0015	-.0016	-0.002
	(.202)	(.153)	(.143)	(0.128)
MEDICAL*unemployed	$4.16x10^{-7}$	$5.98x10^{-7}$		
	(.469)	(.284)		
MEDDEBT/Income	.008			0.011
	(.034)			(0.025)
MEDDEBT1/Income		0.0002		
		(.000)		
Bad Health*Debt/Income			.0002	
			(.000)	
DEBT/Income	$7.66x10^{-6}$	$7.02x10^{-6}$	$7.06x10^{-6}$	$7.16x10^{-6}$
	(.006)	(.016)	(.016)	(.019)
$(DEBT/Income)^2$	$-7.45x10^{-10}$	$-6.62x10^{-10}$	$-6.68x10^{-10}$	$-6.93x10^{-10}$
	(.005)	(.017)	(.017)	(.022)
Rent	$6.20x10^{-6}$	$4.29x10^{-6}$	$4.26x10^{-6}$	
	(.020)	(.200)	(.202)	
Weeks Missed (Illness)	0.0001	0.0001	0.0001	0.0001
	(.041)	(.048)	(.048)	(.009)
State PCI	$2.32x10^{-7}$	$1.81x10^{-7}$	$1.13x10^{-7}$	$-3.23x10^{-6}$
	(.937)	(.952)	(.970)	(.297)
State Exemption	$2.85x10^{-7}$	$3.12x10^{-7}$	$2.72x10^{-7}$	$2.43x10^{-7}$
	(.426)	(.629)	(.429)	(.606)
State Tax Rate	.0066	.0064	0.0065	0.002
	(.004)	(.005)	(.006)	(.249)
State Unemployment Rate	.0034	0.0030	0.0030	0.003
	(.041)	(.070)	(.070)	(.099)
Observations	18259	18259	18259	11056

1. p-values in parentheses
2. All regressions include a constant, state and time dummies
3. All regressions use PSID weights, and the standard errors are corrected using the Huber/White procedure, which allows error terms for the same household to be correlated over time.

Table 4
Probit Results Explaining Household Bankruptcy Filings: Marginal Effects
1984-1994 (3 years)

	(1)	(2)	(3)
Age	0.0002	0.0001	.0001
	(.287)	(.404)	(.385)
Age Square	-3.28×10^{-6}	-2.78×10^{-6}	-2.81×10^{-6}
	(.104)	(.149)	(.148)
Male	-.00002	-.0001	.0003
	(.985)	(.906)	(.790)
White	0.0005	0.0006	.0008
	(.652)	(.575)	(.414)
College	-0.0026	-0.0022	-.002
	(.006)	(.024)	(.003)
Married	-.0011	-.0008	-.001
	(.410)	(.507)	(.310)
Own Business	0.0047	0.0044	.005
	(.097)	(.104)	(.099)
Wealth('000)	-.00003	-.00003	-.00004
	(.000)	(.000)	(.000)
Own House	0.0004	0.0005	.0005
	(.720)	(.668)	(.632)
Medical Coverage	.0009	.0006	.0003
	(.555)	(.650)	(.800)
MEDDEBT/Income	.015		
	(.010)		
MEDDEBT1/Income		.011	
		(.106)	
Bad Health			.002
			(.079)
DEBT/Income	4.89×10^{-6}	5.26×10^{-6}	4.83×10^{-6}
	(.020)	(.022)	(.025)
$(DEBT/Income)^2$	-4.01×10^{-10}	-4.59×10^{-10}	-4.23×10^{-10}
	(.046)	(.046)	(.021)
Weeks Missed (Illness)	0.0001	0.0001	.0001
	(.022)	(.015)	(.021)
State Dummies	Yes	Yes	Yes
Observations	19339	19339	20671

1. p-values in parentheses
2. All regressions include a constant, state and time dummies
3. All regressions use PSID weights, and the standard errors are corrected using the Huber/White procedure, which allows error terms for the same household to be correlated over time.

Table 5: Cox Proportional Hazard Model
Results Explaining Household Bankruptcy Filings: Coefficients 1994-1996

	(1)	(2)
Age	0.092	0.088
	(.064)	(.606)
Age Square	-.001	-.001
	(.023)	(.030)
Male	-.269	-.190
	(.352)	(.518)
White	.215	0.241
	(.443)	(.391)
Education	-0.049	-0.013
	(.269)	(.778)
Married	.208	.283
	(.530)	(.379)
Own Business	0.631	0.906
	(.055)	(.005)
Own House	-.819	-.045
	(.009)	(.893)
Medical Coverage	-.216	-.216
	(.357)	(.353)
MEDDEBT/Income	1.104	
	(.001)	
MEDDEBT1/Income		.028
		(.000)
DEBT/Income	.0014	.001
	(.004)	(.000)
$(DEBT/Income)^2$	$-1.39x10^{-7}$	$-1.15x10^{-7}$
	(.000)	(.001)
Weeks Missed (Illness)	0.018	0.017
	(.004)	(.006)
State Dummies	Yes	Yes
Observations	22175	22175

1. p-values in parentheses
2. All regressions include a constant, state and time dummies
3. All regressions use PSID weights, and the standard errors are corrected using the Huber/White procedure, which allows error terms for the same household to be correlated over time.

Table 6: Cross-Section Results
Probit Results Explaining Household Bankruptcy Filings: Marginal Effects
1994

Age	0.0002
	(.627)
Age Square	-1.77×10^{-6}
	(.581)
Male	-0.001
	(.507)
White	0.001
	(.546)
College	-0.0026
	(.006)
Married	-0.002
	(.303)
Own Business	0.011
	(.129)
Wealth('000)	-.00007
	(.000)
Own House	0.003
	(.290)
Medical Coverage	.001
	(.290)
MEDDEBT/Income	.017
	(.051)
DEBT/Income	.00001
	(.001)
$(DEBT/Income)^2$	-9.5×10^{-10}
	(.002)
Weeks Missed (Illness)	0.0002
	(.004)
Observations	6356

1. p-values in parentheses
2. All regressions include a constant
3. All regressions use PSID weights, and the standard errors are corrected using the Huber/White procedure, which allows error terms for the same household to be correlated over time.

Table 7: Economic Impact
(Based on Average Sample Filing Rate of 0.4 percent)

	Change	Percent Change in Filing Rate	Number** of filings
Education	+1 year	-7.5	-97,500
Family Wealth	+$1000	-0.75	-9750
Rent/Mortgage	+$1000	0.1	1500
MEDDEBT/Income	+10 percent	36	468,000
MEDDEBT1/Income	+10 percent	27	351,000
Missed Work	+1 week	2.5	32,500
Tax Rate	+0.1 percent	15	195,000
Unemployment Rate	+0.1 percent	7.5	97,500

** Based on 1999 bankruptcy filing rate of 1.3 million

Table 8

Results Explaining Consequences of Household Bankruptcy Filings:1994-1996

Dependent.Vars	Independent.Vars	Marginal.Eff	Coefficients
Own House[1]	Lagged Bankrupt	-.105***	
Own House[1]	Medical Bankrupt	-0.11*	
Own House[1]	CreditCard Bankrupt	-0.14***	
Own House[1]	JobLoss Bankrupt	-0.17***	
Hours Worked[2]	Lagged Bankrupt		2.54***
Hours Worked[2]	Creditcard Bankrupt		2.65**
Hours Worked[2]	Medical Bankrupt		-2.37
	Persistence of Effect		
Own House[1]	Lagged Bankrupt90	-0.085**	
Own House[1]	Lagged Bankrupt84	-0.082**	
Hours Worked[2]	Lagged Bankrupt90		2.53**
Hours Worked[2]	Lagged Bankrupt84		2.61***

***significant at 1 percent**significant at 5 percent *significant at 10 percent

Notes

1. Regressions estimated using a probit model. Own House is a dummy equal to 1 if the household owned a home in year t, and 0 otherwise. Hours worked measures the average work hours per week for the household head in any year. The standard errors are corrected using the Huber/White procedure, which allows error terms for the same household to be correlated over time.
2. Regressions estimated using Random Effects GLS model.
3. All regressions include a constant and time dummies, and controls for head age, sex, race, education, marital status, wealth, debt and income levels. Controls are also included for state-level macroeconomic conditions such as state tax rates, per capita incomes and unemployment rates. Other state-level unobservables are captured through the use of state dummies.
4. Lagged Bankrupt is a dummy variable equal to 1 if the individual had filed for bankruptcy at any time before 1994. Lagged Bankrupt90 is a dummy equal to 1 if the individual filed between 1990 and 1994. Lagged Bankrupt84 is similarly equal to 1 if the individual filed between 1984-1994. Medical Bankrupt refers to those subset of filings where the primary reason for filing was medical debts. CreditCard Bankrupt refers to those filings where the primary reason was credit card debt. Job Loss Bankrupt refers to those filings where the primary reason was job loss.
5. All regressions use PSID weights.
6. These results hold even if we look only at the years 1994 and 1996, allowing for greater variation in the right –hand side variables.

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[1] Homestead exemptions refer to exemptions against equity in owner occupied homes. Personal property exemptions refer to exemptions taken against cars, jewellery etc.

[2] http://www.abs-cbnnews.com/storypage.aspx?StoryId=17748

[3] Households' financial benefit from filing for bankruptcy under Chapter 7 is the value of debt discharged, and their financial cost is the value of non-exempt assets that they must give up. Households' net financial benefit is the difference between the two.

[4] A re-examination of their data by Dranove and Millenson (Health Affairs,25,no.2,2006), suggests that medical bills are a contributing factor in personal bankruptcies in only 17 percent of cases. This is again based on just the survey of filers.

[5] They include as medical debtors people who cited any form of addiction or uncontrolled gambling, or had experienced the birth or death of a family member. The respondents included low-income people who had no jobs (not necessarily due to illness), had low earnings in the past, and other unpaid debts.

[6] http://www.kff.org/newsmedia/upload/7371.pdf

[7] http://www.cmwf.org/usr_doc/837_Doty_seeing_red_medical_debt.pdf

[8] Thus in year 2000, with an average family income of $30,000, this would mean that $600 in medical debts would be classified as a "high" level of debt, pushing people to file for bankruptcy. However, as pointed out by the United States Trustee Program, the average level of medical debt among bankruptcy filers was $2600-this figure too was skewed upwards by the fact that a few debtors had medical debt in excess of $50,000. http://www.usdoj.gov/ust/press/articles/abi01octnumbers.html

[9] The United States Trustee Program is a component of the Department of Justice responsible for overseeing the administration of bankruptcy cases and private trustees

under 28 U.S.C. §586 and 11 U.S.C. §101, *et seq.* It consists of 21 regional U.S. Trustee Offices nationwide and an Executive Office for U.S. Trustees (EOUST) in Washington, DC. "The Class of 2000: Bankruptcy By the Numbers" http://www.usdoj.gov/ust/press/articles/abi01octnumbers.html

[10] Gross and Souleles (2002) do not find lack of health insurance to be a significant predictor of bankruptcy.

[11] 1984 is the first year for which the household reported a bankruptcy filing. We realize that there are potential errors associated with imperfect recall, but are constrained to work with the given data.

[12] A possible reason for the low percentage of insured individuals could be that the survey question on medical insurance asks respondents if they were covered by Medicare, Welfare, Medical Services etc, but it may not include private insurance or employer provided insurance, and it does not include Medicaid. More detailed questions on health insurance were asked in the surveys after 1999.

[13] As far as possible, we try to include only cases where the loan was taken prior to the filing. This is true for the 1994-1996 panel. For the 1984-1994 panel, we have had to classify as medical all those who ever reported taking a loan for medical reasons, since we do not have data on when exactly the loan was taken. This is likely to make our measure of MEDICAL somewhat noisy for that panel, though we do not think this a big problem since if households did resort to taking a (recent) loan for medical reasons, they are likely to have been experiencing medical problems and accumulating medical bills for some time.

[14] This question is asked of all bankruptcy filers as well as non-filers. About 4 percent of bankruptcy filers had taken a loan to repay medical debts, while 13 percent had taken a loan to repay credit card debt. The ratio of medical filers to credit card debt filers is thus around 30 percent. This is approximately the same proportion as the number of people who filed for medical cost reasons to the number of people who filed for credit card debt reasons (32 percent). Of all those who we classified as MEDICAL, about 1 percent filed for bankruptcy.

[15] We could also create a weighted average of all these characteristics for each individual, and assign MEDCOVER a value of 1 only when more than 50 percent of the criteria are met.

[16] *How to File for Chapter 7 Bankruptcy*, Elias, Stephen, Renauer, Albin and Leonard, Robin (Publisher: Nolo)

[17] State Maximum Marginal Tax Rates change for a few states for every year in the sample.

[18] Interestingly, this is close to the number derived by Fay et al (2002) of 8 percent.

[19] The average number of weeks missed was 1.

[20] Surprisingly, Fay et al (2002) do not find a significant impact of adverse events such as unemployment spells experienced by the household head in the previous year or health problems.

[21] As a robustness check, we tried dropping a few variables, like MEDCOVER, MEDICAL*UNEMPLOYED from the model, but the results did not change.

[22] This is obtained by dividing the percentage point marginal effect by 0.4 , the average filing probability.

[23] This is similar to results reported by Fay et al (2002)

[24] The p-value associated with the coefficient estimate is 0.80, but is much higher for the marginal effect.

[25] This further suggests that estimates obtained by Fay et al (2002), who assume constant debt levels between the five year periods may be biased downwards as well.

[26] Again, in this case, no significant coefficients could be estimated for MEDDEBT1.

[27] These results hold when we use instruments for the bankruptcy variable, such as the state bankruptcy exemption. This variable is positively correlated with bankruptcy filings, but is not likely to be correlated with home ownership. (For our sample the correlation is close to 0).

[28] If we take business ownership as the dependent variable, the coefficient on lagged bankruptcy is positive and significant (at 10 percent) only if we include all cases between 1980 and 1994. There is no short-term impact of a filing on business ownership. Another variable that we tried is insurance coverage. In this case, there is a negative and significant effect of previous bankruptcy filings (LAGGED BANKRUPT) on health insurance coverage.