

The Consumption Effects Associated with Filing for Personal Bankruptcy*

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Abstract

This paper presents estimates of the consumption benefits for households that file for personal bankruptcy. Using the Panel Study of Income Dynamics (PSID), we find that households that filed for bankruptcy under Chapter 7 during the sample years (1990-1995) were able to generate an increase in consumption growth of approximately 15% during that time. In addition, we estimate whether households that live in states with more generous bankruptcy exemptions have a larger consumption smoothing benefit. We present separate results for households that filed for bankruptcy and for ones that did not. For the households that filed for bankruptcy, results suggest that, for a 10 percent increase in the bankruptcy exemptions, consumption increases by 1 percent. For the households that never filed, we find those that live in states with more generous exemptions are also better able to consumption smooth, but the effect is relatively small.

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I. Introduction

Personal bankruptcy in the United States is part of the social insurance structure provided by the Federal and state governments. Bankruptcy provides (net-of-debt) income and wealth insurance. By allowing filers to keep some of their assets, bankruptcy helps maintain a minimum level of wealth. By discharging some debts, bankruptcy protects net-of-debt income so that it can be used for current expenditures rather than to service debt.¹

In providing this income insurance, bankruptcy is similar to social insurance programs that are used by more individuals such as Unemployment Insurance (UI), Temporary Assistance to Needy Families (TANF), and Food Stamps.² Like these three programs, bankruptcy protection has costs and benefits associated with it. On the cost side, UI and TANF have negative impacts on work and job-search (see Meyer 1995 for UI and Moffitt 1992 for TANF).

For bankruptcy, Gropp, Scholz, and White (1997) examine the effects of bankruptcy laws on the supply of credit and on the interest rates for automobile loans. They find that generous bankruptcy laws reduce the availability of credit to low-asset households and that generous laws increase the interest rates on automobile loans for low-asset households. Musto (2002) estimates a direct cost of bankruptcy to filers. After filing, a flag appears on the individual's credit report for up to ten years. Musto finds that those households with relatively good credit scores enjoy significantly more access to credit when the bankruptcy flag is removed, indicating that the filing decreased their access to credit for up to ten years.

As for the benefits of these programs, there has been a growing literature on the benefits of receiving government programs. Gruber (1997, 2000) and Gunderson and Ziliak (2002) estimate the consumption smoothing benefits of UI, TANF, and Food Stamps, respectively.³ However, there have

¹ Posner (1995) referred to bankruptcy as social insurance for the non-poor, which appears accurate. Using the 1998 Survey of Consumer Finances (SCF), Budria, Diaz-Gimenez, Quadrini, and Rios-Rull (2002) confirm this by finding that the bankruptcy rate is highest for households in the third quintile of the income distribution. As for wealth, the bankruptcy rate is highest for households in the second quintile of the wealth distribution.

² In 2000, 1.2 million households filed for personal bankruptcy, 6.9 million individuals received UI benefits (in 1999), 5.9 million individuals received TANF benefits, and 17 million individuals received Food Stamps.

³ Gruber (2000) actually estimates the benefits of Aid to Families with Dependent Children (AFDC), the predecessor of TANF.

been no comparable estimates for personal bankruptcy. We attempt to fill this gap by estimating how filing for bankruptcy affects household's consumption in the year they file.

A first pass at an estimate of the benefit of bankruptcy can be found in Fay, Hurst, and White (2002) and Fisher (2002), which measure the financial benefit to filing. The financial benefit equals the debt forgiven minus any lost assets and is used as a predictor of bankruptcy. Fisher (2002) finds that the financial benefit for bankruptcy filers in the year they filed equals \$4,600. While the financial benefit is a good predictor of whether a household files for bankruptcy, it is difficult to compare to the benefits of the three related government programs. Further, it is not clear that the financial benefit is the parameter of interest. Policymakers may be more interested in how filing for bankruptcy affects consumption rather than the amount of debt discharged. Although the financial benefit and the consumption smoothing benefit variables may be highly correlated, it is consumption that appears in economic models of utility and so bankruptcy's affect on consumption should be the parameter of interest.

In this paper, we estimate the consumption smoothing benefits of personal bankruptcy for bankruptcy filers, using the bankruptcy and consumption information in the Panel Study of Income Dynamics (PSID). We use two identification strategies to estimate this benefit. First, we estimate a simple model of household consumption growth using a panel of households over the years 1990 to 1995. Using this sample, we find that, households which filed for bankruptcy under Chapter 7 of the bankruptcy code experienced on average a 15 percent increase in the growth of consumption during the sample years. However, those that filed under Chapter 13 experienced an insignificant change to their consumption.⁴ This result has significant policy implications. The recently proposed changes to bankruptcy law will essentially means-test Chapter 7 of the bankruptcy code. Households that have income sufficient to repay at least 25 percent of their unsecured debt will not be allowed to file under Chapter 7, forcing them into Chapter 13 if they decide to file. Our results suggest that this policy change will significantly lower the consumption benefit for those households forced from Chapter 7 into Chapter 13.

⁴ Of the 137 filers in our sample, ninety-two (67.2 percent) filed under Chapter 7 and forty-five (32.8 percent) filed under Chapter 13. During the 1980s and 1990s, approximately 70 percent of all filings occurred under Chapter 7.

Our second method of identifying the consumption benefit of bankruptcy uses the variation in bankruptcy exemptions across states to examine whether there is a larger benefit for households that live in states with more generous exemptions. The laws vary across states and over time. In 1995, Maryland was one of the least generous states with exemptions totaling around \$8,500. In contrast, Texas has an unlimited homestead exemption and a \$60,000 personal property exemption. We predict that someone living in Texas would have a larger consumption benefit than an identical person living in Maryland.

With this second identification strategy, we use two different PSID samples. First, we restrict our sample to households that filed for bankruptcy between 1991 and 1996. Here, we find that a 10 percent increase in the exemptions increases the households change in consumption by approximately 1 percent for households living in states with exemptions exceeding \$70,000. For households that live in states with exemptions less than or equal to \$70,000, we find little impact from an increase in the exemptions.

Our second sample is a cross-section of non-filers, where we examine whether the option to file for bankruptcy and the existence of the bankruptcy laws provide a positive externality to households that have not filed. This is the complement to Gropp, Scholz, and White because they estimate the negative externalities of the laws while we estimate one positive externality. We find some evidence that increases in the exemptions help non-filing households, but the evidence is not as strong for the non-filers as it is for the filers. One consistent estimate we find for non-filers is that those households that live in states with an unlimited homestead exemption have higher consumption by 3.4 percent.

The paper is organized as follows. The next section discusses the data and the empirical model. In the third section, the results using the panel of households are presented. The fourth section presents the empirical results using the cross-section of bankruptcy filers. Section five examines the possibility that the existence of bankruptcy provides an option value to households. Section six concludes.

II. The Data and Estimation Strategy

A. Data

We use the Panel Study of Income Dynamics (PSID), which is a longitudinal household survey that began in 1968, for all empirical work in the paper. In addition to having longitudinal information on

expenditures, the PSID includes the necessary information about any bankruptcy filings. In the 1996 wave, all households were asked whether they ever filed for bankruptcy. If they had filed, additional information was gathered, including the year they filed. If the household was not in the 1996 wave of the PSID, the household is excluded from our sample. In addition, since the 1996 survey took place during 1996 rather than at the end of the year, some households may have filed for bankruptcy in 1996 but after they were surveyed. If we included the 1996 wave in all specifications, we may incorrectly identify some bankruptcy filers as households that did not file. Therefore, the last year in our panel sample is 1995. When we only use a cross-section of bankruptcy filers, we include the filers from 1996 as well.

The other important aspect of the PSID data is the expenditure questions. The PSID includes two types of expenditures on a regular basis: food and housing. Since these are the components reported by the PSID, we must limit the analysis to these expenditures. However, one assumes that these components are the ones that are most relevant if we are concerned about the well being of the household. The commonly assumed necessities are food and shelter, not food, shelter, boats, automobiles, and furniture.

The PSID asks several questions about food eaten out, food eaten at home, and food stamp usage. We sum these components to create one food expenditure variable. For housing, the PSID includes questions on rent and mortgage payments, which are merged into one housing variable. For homeowners, housing expenditures equals the sum of mortgage payments, homeowner's insurance payments, and property taxes. For renters, housing expenditure equals rent payments. By using housing expenditures in addition to food, we are able to get a broader measure of consumption.

Since the 1989 wave of the PSID does not include the food expenditure questions, 1990 is the first year in our sample. Since we lag consumption by one period to create our dependent variable, the change in log consumption, we have at most five years (1991-1995) of usable data for each household.

Within the five years of our sample, we place two significant restrictions on the data. First, the household must be in the 1996 wave to be included. If the household is not in the 1996 wave or if the household did not provide a valid response to the bankruptcy questions, we do not know whether the household filed for bankruptcy. The other major restriction is that they must have valid expenditure data.

Since we use an unbalanced panel of households, we do not require that the households have valid expenditure data every year of the panel, but we do require at least two consecutive observations.

B. Estimation Strategy

Three different sets of results are presented, but each is derived from a similar empirical specification. Therefore, we discuss the general estimated model in this section and discuss any alterations to this model when appropriate. The estimated model takes the form:⁵

$$\Delta C_{ijt} = \beta_0 + \beta_1(B_{ijt}) + \beta_2 X_{it} + \beta_3 Z_{jt} + \gamma_t + \theta_i + \varepsilon_{ijt}. \quad (1)$$

ΔC_{ijt} represents the change in log consumption for household i in state j in year t ; B_{ijt} is the bankruptcy variable; X_{it} represents a set of household characteristics; Z_{jt} represents a set of state-level variables, which may include a time-invariant component; γ_t represents time dummy variables; θ_i is an individual effect; and, ε_{ijt} is a random error term.

For the dependent variable, most specifications only use food consumption. While the PSID includes housing expenditures, our focus is on food consumption because filing for bankruptcy can affect homeowner status. Of the bankruptcy filers in our sample, seven (5.1 percent) owned a home in the year before they filed but rented in the year of their filing. In comparison, 2.2 percent of the non-filers owned a home in $t-1$ and rented in t . Of the seven filers, four had a decrease in housing expenditures in the year they filed while the other three had an increase. Since the interpretation of our results relies on the fact that an increase in expenditures increases welfare, we need to be careful with housing. It is not clear that the three filers that spent more per year on rent are better off.

The bankruptcy variable, B_{ijt} , identifies the consumption smoothing benefit of bankruptcy, but the identification strategy differs across samples. The panel specifications include a dummy variable that equals one if the household filed for bankruptcy in year t , and zero otherwise. If there is a consumption benefit, the coefficient on this variable should be positive. In this specification, we address the question does filing increase the household's ability to consume in the *immediate* period around filing.

The subsequent section uses a sample of bankruptcy filers only. This section estimates whether households that live in states with more generous bankruptcy exemptions are better able to consumption smooth than households that live in states with less generous bankruptcy exemptions. To accomplish this, we use two bankruptcy variables: the total exemption and the unlimited exemption.

Researchers using the PSID data to examine the bankruptcy decision use the financial benefit to filing as the measure of the benefit of bankruptcy (see Fay, Hurst, and White, 2002). This financial benefit equals the debt forgiven minus the assets lost (if any). In this paper, we use the state-determined maximum bankruptcy exemption rather than the financial benefit. Since policymakers control the exemption and not the debt and assets of households, the parameter of interest is the exemption. Estimating (1) with the exemptions gives the effect of a change in the policy variable on the ability of households to smooth consumption. Using the financial benefit in (1) would not be as instructive because the effect of changing the exemption is mixed in with the household's debt and asset choices, which are affected by the bankruptcy exemptions.

Consequently, in the results using the cross-section of households, the total exemption and the unlimited exemption variables are used to identify the smoothing benefit. The total exemption equals the sum of maximum, allowable bankruptcy exemptions in the state, which equals the sum of the following exemptions, where applicable: homestead (if not unlimited), personal property, automobile, tools of the trade, jewelry, and wildcard. Some states allow a bankruptcy filer to choose either the state or Federal exemptions. In these states, the Federal exemptions are used if they are higher.

One further complication is that some states allow filers to retain an unlimited amount of equity in their home. Rather than top-code the total exemption variable, we create a dummy variable for the states with an unlimited homestead exemption.⁶ This variable equals one if the household lives in a state with an unlimited exemption, and zero otherwise. For the states with an unlimited homestead exemption, the total exemption variable is the sum of the non-homestead exemptions.

⁵ The appendix shows a simple theoretical model of the bankruptcy decision. In this model, consumption smoothing benefits occur between $t-1$ and t .

The demographic characteristics of the household include variables that help explain consumption and changes in consumption. For these variables, we follow Gruber (1997) and include age, race, marital status, education, and gender of the head of the household. Also included is the change in the family size and the change in the log food needs. The latter variable captures changes in family size and the age of its members. In some specifications, two additional variables, income and liquid wealth, are included to control for the resources of the household.

We include several variables to control for differences across states that may affect the ability of households to consumption smooth. First, a state-specific housing price index is included. This variable comes from the Freddie Mac repeat-sales price index. While this only measures changes in housing prices, it is presumably correlated with changes in the general price-level within a state.⁷ The state unemployment rate is included to control for the condition of the state's economy. Next, we include average UI benefits and average AFDC benefits. Fisher (2001) provides evidence that UI and AFDC are substitutes for personal bankruptcy. If these variables were excluded, then the coefficient on the bankruptcy variable may be absorbing some of the effect of changes in UI and AFDC.

Several other potential concerns with regard to estimation need to be addressed. First, personal bankruptcy is not targeted to a specific group like UI and AFDC. Both the relatively wealthy and relatively poor can file for bankruptcy, which may make it more difficult to isolate the consumption smoothing benefit. Further, as a percentage of expenditures, a poorer household might receive a larger consumption smoothing benefit. To control for this, we include income and the lag of household wealth in some specifications.

Next, the timing of bankruptcy is not as clear-cut as it is for other programs. For UI, it is relatively easy to identify when the individual becomes unemployed and begins receiving UI benefits. For bankruptcy, the court filing is the beginning of a process that takes four months, on average (Administrative Office of the U.S. Courts 1998). This means that the year of the bankruptcy reported in

⁶ This follows the method in Gropp, Scholz, and White (1997) for dealing with the unlimited exemption.

⁷ The data comes from Freddie Mac's web site <<http://www.freddie.mac.com/finance/cmhpi/past.htm>>.

the PSID may be accurate, but the household may not receive the full benefits of filing until the process is complete, which could be in the next calendar year. If filings are distributed evenly over the year, then approximately one-third of all filings span more than one calendar year.⁸

The final three issues are related to our ability to find a consumption smoothing benefit. First, do households engage in strategic behavior to take advantage of the bankruptcy laws? For example, households could increase debt and consumption in the year(s) before filing by borrowing on a credit card. If this occurs, it may be harder to find a consumption smoothing benefit because households may alter their consumption in the year(s) before filing. However, legal limits on the behavior of households may decrease the household's ability to increase debt or decrease assets in anticipation of bankruptcy.⁹

Analogously, the presence of bankruptcy may provide an insurance benefit to non-filers as well, as argued by White (1998). Knowing that they have the option to file for bankruptcy, the household may already be consumption smoothing before they file for bankruptcy. When they actually file, we would expect to find a smaller consumption smoothing benefit if they have already adjusted their consumption. We test whether bankruptcy provides this option value in the fifth section of this paper.

Finally, filing may also have a negative impact on the ability to consumption smooth because it decreases access to credit (Musto 2000). Households may have less access to credit in the years after their filing, which hinders their ability to smooth consumption. We may need to control for access to credit to separate the effects of the exemptions on consumption smoothing from the effects of this lost access to credit. Variables that are related to the household's creditworthiness before bankruptcy are correlated with the household's creditworthiness after bankruptcy (Musto 2000). Therefore, variables like income and liquid wealth may proxy for creditworthiness before and after bankruptcy.

⁸ The American Bankruptcy Institute reports quarterly filing data. It does appear that the filings are not evenly distributed across quarters. From 1994-2001, the filings in the first quarter are always less than one-fourth of the filings for the whole year. Similarly, the number of filings in the second quarter are always above this level. For the third and fourth quarters, filings are close to the expected level.

⁹ U.S. Code: Title 11, Section 707(b). This part of the bankruptcy code specifies that bankruptcy judges have the discretion to dismiss any bankruptcy filing that constitutes a "substantial abuse" of the process.

III. Results – Panel Data

To estimate the effect of bankruptcy filing on consumption, we estimate (1) for a panel of households, using the 1990-1995 waves of the PSID. There are three issues that must be addressed through our choice of estimation strategy. First, we must deal with the time-invariant individual effect (θ_i). One econometric approach is to use the within transformation to "sweep-away" the fixed effect. However, this fixed effects estimator is less efficient when the u_{it} are serially correlated, which is likely in our case. Alternatively, we chose the first difference transformation to "sweep-away" the household specific effect. This is the panel difference-in-differences (DID) estimator where (1) is now of the form:

$$\Delta C_{ijt} = \xi_t + \alpha_1 \Delta B_{ijt} + \alpha_2 \Delta X_{it} + \alpha_3 \Delta Z_{jt} + \Delta u_{ijt}. \quad (2)$$

where all regressors are in changes, including the bankruptcy dummy, and the ξ_{it} are time intercepts. The usual downside to this approach is that the researcher loses one year of data in the transformation. However, our specification of the dependant variable is already in changes and so we lose that year regardless.¹⁰

A second issue involves the potential that consumption changes are mismeasured. Therefore in all specifications, as in Gruber (2000), we censor the largest 1 percent positive and negative deviations of consumption changes to the 99th and 1st percentile respectively to eliminate the considerable noise in the consumption variable.

Finally, for each household, the bankruptcy choice is voluntary and so it is possible to expect that households may "time" the decision. In particular, we may see households which are expecting to file in time $t+1$ increasing consumption and running up debt levels at time t . The econometric ramification of this behavior is that current values of the error term may be correlated with future values of the bankruptcy variable. We solve this in the third specification presented in this section by conditioning on the lead of the filing variable. This solution is chosen because the estimated coefficient on the lead

¹⁰ To be complete, the least squares dummy variable (LSDV) technique is another approach we could use. However, it is obvious that with 6,058 unique households, this approach would greatly reduce degrees of freedom. Therefore, this approach was never pursued.

variable can be viewed as an indication of strategic behavior on the part of the household and therefore the inclusion of this variable allows us to estimate an economically meaningful effect.¹¹

The results of the DID estimates are presented in Table 1. The table presents three specifications. Specification one includes the general bankruptcy filing dummy which is agnostic with respect to the actual bankruptcy chapter chosen. The estimated coefficient on $\Delta filed$ is positive, but insignificant at conventional levels. Specification two incorporates information about the actual chapter of bankruptcy filed by the household. Column two presents the estimated coefficient of $\Delta chap7$ and $\Delta chap13$ which are dummy variables representing Chapter 7 filing and Chapter 13 filing respectively. The coefficient for Chapter 7 has a positive and statistically significant effect ($p = 0.052$) on consumption, while the Chapter 13 effect is negative, but insignificant at conventional levels of significance ($p > .010$).

Finally, column three presents the results from the model where the lead of the filing variable was included for both Chapter 7 and Chapter 13. The results are striking. The influence of filing for Chapter 7 on consumption growth remains positive and statistically significant ($p = 0.023$) and is approximately 2.4% larger than the estimated impact from specification one. The coefficient on $\Delta chapter7(lead)$ is positive, but insignificant. Alternatively, the Chapter 13 effect is still negative and insignificant, but the coefficient on the lead is negative and statistically significant ($p = 0.040$). This result suggests that in the year before filing, Chapter 13 filers actually experience a decrease in consumption of 22.7% on average.

This result is not unexpected. There are several reasons to expect that Chapter 7 filers receive a different benefit than Chapter 13 filers. First, Chapter 7 is a liquidation of debts while Chapter 13 is a reorganization of debts. Under Chapter 13, most debts are reorganized while only some debts are forgiven, while Chapter 7 discharges most unsecured debts. Second, the full benefit of Chapter 13 is not realized until the repayment plan is completed. Debts are not discharged under Chapter 13 after the repayment plan is completed, which is three to five years after the filing. If the plan is not completed, the Chapter 13 filer does not receive the discharge of debts. Third, the de facto rule regarding repayment in

¹¹ Woolridge (2002) argues that "...only rarely does putting future values of explanatory variables in an equation lead to an interesting economic model." This seems to be one of those rare occasions.

bankruptcy is that Chapter 13 filers must repay at least as much debt as they would have repaid if they had filed under Chapter 7. At best, Chapter 13 filers will repay the same amount as they would have repaid under Chapter 7, but they will most likely repay more. These factors should make Chapter 13 less beneficial and that is verified by our results.

IV. Results - Cross-Section Data

Now that we have found evidence that filing for bankruptcy helps households consumption smooth in the year they file for bankruptcy, we want to test whether this ability differs across states. States are allowed to set their own bankruptcy exemptions, which determine how much property a household keeps when it files for bankruptcy. For example, if the automobile exemption equals \$2,400, then a bankruptcy filer can keep his vehicle if his equity in the vehicle is less than or equal to \$2,400. If his equity exceeds this amount, he forfeits the vehicle when he files and is given \$2,400 in compensation for the vehicle after it is sold by the bankruptcy trustee. The range of exemptions is large. In 1996, Delaware was one of the least generous states, only allowing a \$5,000 wildcard exemption that could be used for any property. Kansas was one of the most generous, exempting an unlimited amount of equity in a homestead and \$20,000 in an automobile.

We use this variation in the exemptions across states to determine whether households that live in states with more generous exemptions are better able to consumption smooth. This approach is similar to the approach taken by Gruber (1997, 2000) to estimate the benefits of UI and AFDC, respectively.

One limitation of this identification strategy is that the amount of debt forgiven does not vary across states. Two identical households, with one living in Delaware and one living in Kansas, should have the same amount of debt discharged in bankruptcy.

With this identification strategy, we present results using two different samples. The first is a cross-section of bankruptcy filers. The second sample is a cross-section of households that never filed for bankruptcy. With the sample of non-filers, we test whether bankruptcy provides an option value for households. Households that have not filed for bankruptcy retain the option to file, which provides a benefit for risk-averse households. We estimate whether this benefit is larger for households that live in

states with more generous exemptions.¹² The results of a Chow test indicate that estimating separate specifications for the filers and non-filers is appropriate.¹³

In this section of the paper, we use all households from the PSID that filed for bankruptcy between 1991-1996 and include them only in the year they filed. Year dummy variables are included to control for differences in consumption that may have occurred over time. We need to use the filers from all six years because any single year does not have enough bankruptcy filers. Each year has no more than twenty-eight filings (1991 -- 27 filers; 1992 -- 23; 1993 -- 24; 1994 -- 28; 1995 -- 24; 1996 -- 5). Since the PSID asked the bankruptcy questions during 1996, more households may have filed for bankruptcy in 1996 but did so after being interviewed. This problem does not occur in previous years because all bankruptcy questions were asked in the 1996 wave.

Table 2 presents the basic specifications following equation (1). The dependent variable used in this section is the change in log food expenditures. Column I of Table 2 presents the basic specification with the maximum total, bankruptcy exemption, its square, and a dummy variable for states with an unlimited homestead exemption. We include a square of the exemption to allow for a quadratic effect.¹⁴

Column II of Table 2 adds quartiles for the change of log income and the lag of liquid wealth. We include the change in log income and the lag of liquid wealth to control for the resources of the household. In addition, Musto (2000) finds that these variables are good measures of the creditworthiness of households after they file. Households with higher income and wealth before filing have a better credit rating after filing. This effect found in Musto should reinforce the impact of these variables on the household's ability to consumption smooth.

The bottom two quartiles for the change in log income include households that had negative income growth, and the top two quartiles include households with positive income growth. Since filing

¹² We do not estimate the magnitude of the option benefit. Rather, we estimate whether the option benefit differs for households living in states with different exemptions. See White (1998) for an estimate of the option value.

¹³ The $F(17, 3655) = 2.219$, which means we can reject the hypothesis at the 1 percent level of significance that the change in log consumptions equation for the two samples are the same.

¹⁴ When the squared term is not included, the exemption coefficient is statistically insignificant. When its square is also included, both coefficients are statistically significant and the fit of the overall specification improves.

for bankruptcy alters the wealth of the household, the specification uses the lag of wealth instead of contemporaneous wealth.

In column I, the coefficients on the maximum total exemption and its square are both statistically significant, but the coefficient on the unlimited exemptions is negative and insignificant. Initially, an increase in the exemptions has a negative impact on the change in household consumption, but the effect turns positive at exemptions exceeding \$65,000, which represents the 80 percentile of exemptions. A similar pattern is found in column II, where the turning point occurs at exemptions exceeding \$69,000. This means that those with low exemptions receive little or no added benefit from the exemptions. It is only the households that live in the most generous states that receive a larger benefit to filing. Even then, the magnitude of the effect is not large. For a household living in a state with a \$70,000 exemption, a 10 percent increase in the exemption would increase the change in log consumption by approximately 1 percent. The fact that we find a small impact is not surprising given the reasons discussed above.

As for the other variables in Table 2, the change in family food needs has a negative and significant coefficient in column I, but it is insignificant in column II. This coefficient is predicted to be positive. As expected though, change in family size is positive and significant. It may be that with a relatively small sample size we are not able to identify the effects of these similar variables separately.

In column II, the change in income coefficients are all negative, indicating that households with smaller income changes are less able to smooth consumption, as expected. But, only the coefficient on the second quartile is significant. The coefficients are marginally significant as a whole ($\text{Prob}>F = 0.11$).

The coefficient on lagged wealth is negative and significant, which does not match expectations. We expect that households with higher liquid wealth last period should be able to better consumption smooth. Changing the functional form of this variable does not change the results. Since the income and wealth variable are not the variables of interest and since their inclusion in the specification does not change the exemption coefficients, we are not too concerned about the counter-intuitive signs.

Table 3 presents one other specification for the bankruptcy filers. The results from the DID estimation suggest that filing under Chapter 7 provides a consumption benefit to the household, while

filing under Chapter 13 actually imposes a consumption cost. A similar test can be conducted using this sample of bankruptcy filers. In Table 3, we estimate whether the effect of living in a state with more generous exemption affects Chapter 7 filers differently than Chapter 13 filers. To estimate whether there are differences, Chapter dummy variables are included and also interacted with the exemption variables.

As can be seen in Table 3, the coefficients on the total exemption variables for the Chapter 7 filers are statistically significant and the signs match the pattern from Table 2. All coefficients for the Chapter 13 filers are all statistically insignificant. This matches the findings from the panel results.

Other specifications were run to test for the robustness of the results, but they are not presented here. Some of the variables included in other specifications include: household debt, whether the head was unemployed, and exemption quartiles. Including these variables did not change the results significantly. Except for the specification with the exemption quartiles, the coefficients on the exemption variables match the pattern in Table 2. When the exemption quartiles were used instead, the results fail to reject the hypothesis that households that live in states in the bottom quartile or third quartile have a significantly different benefit than households that live in states in the top quartile. The results do suggest that households in the second quartile have a lower benefit than households in the top quartile.

These results suggest that if there is a larger consumption smoothing benefit for filers that live in states with higher bankruptcy exemptions, the benefit is not large. The effect is seen through the dollar value of the exemptions and not in the states that have an unlimited homestead exemption. Further, this effect is only seen in households that live in states with exemptions exceeding \$70,000.

V. Evidence of an Option Value

This section addresses the issue of whether bankruptcy provides a consumption smoothing benefit for the non-filers. Like the previous section, the results presented for the non-filers follow the Gruber (1997, 2000) model. These results address the question of whether living in a state with more generous exemptions increases the insurance benefits of bankruptcy for households that have not filed. To accomplish this, we use a cross-section of non-filers from 1995. Since some households in the 1996 wave

of the PSID may have filed for bankruptcy in 1996 but filed after they were interviewed, we do not use 1996 data for the non-filers.¹⁵ Instead, we use the next most recent wave from the PSID – 1995.

In the sample of non-filers, we have 3,558 households that have valid food and housing expenditure data. In Table 4, we use three different measures of household expenditures: 1) food, which matches the previous specifications; 2) housing; and, 3) food plus housing.

With the filers we did not use housing expenditures because bankruptcy may force the sale of the home, which means that some homeowners may have been forced to become renters in the year they filed for bankruptcy. While some non-filers do change ownership status, this is a decision made the by the household, while the decision to become renters may be forced by the bankruptcy filing.

The first column in Table 4 uses food expenditures. The coefficient on the exemption variable is significant, but the coefficient on the squared term is insignificant. Like the results for the filers, the unlimited coefficient remains insignificant. However, the second column uses housing expenditures as the measure of consumption, and the unlimited coefficient is positive and statistically significant. As for the exemption variables in column II, the total exemption coefficient is negative but insignificant while the squared coefficient is positive and significant.

In the third column of Table 4, we combine food and housing expenditures into one variable. Now, all three exemption coefficients are statistically significant at the 10 percent level. In all three columns of this table, the result for the unlimited exemption is not surprising. We would expect that the unlimited homestead exemption would be more relevant to housing expenditures than food expenditures. The coefficient on the unlimited variable suggests that living in a state with an unlimited exemption is associated with a 3.4 percent larger change in consumption than living in a state without it.

Interestingly, the signs of the total exemption variable and its square for the non-filers are the opposite of what they were for the filers. For the non-filers, those households living in a state with lower exemptions experience a small, positive marginal impact from an increase in the exemptions while those living in states with exemptions exceeding \$55,000 have a small, negative marginal impact.

¹⁵ Most PSID interviews take place around March.

The other notable result in Table 4 is that the coefficients on change in log needs and change in family size are both positive and significant. The reason this result is notable is that the coefficient on the change in needs was negative and significant for the filers.

Table 5 presents three additional specifications to check the robustness of the results. The dependent variable in each specification is the change in log food expenditures. The first panel includes the change in log income and the lag of wealth. The results look very similar to the results from the first column of Table 4. The coefficient on the total exemption is the only exemption coefficient that is significant. As for the change in income, the coefficients match expectations, but only one of the coefficients is significant. As with the filers, the lag of wealth coefficient is negative and insignificant.

The second and third panels of Table 5 present the same specification as the first column in Table 4, except we use a different year of data. We initially used the 1995 wave because it was the most recent data that we had where we knew whether a household filed for bankruptcy or not. As a further test, we present separate regressions using 1994 and 1993. The second panel uses the 1994 wave, and none of the exemption coefficients are significant. However, the third panel uses the 1993 wave, and both the total exemption coefficient and the exemption squared coefficient are significant. These results suggest that the effect of the exemptions may not be large for non-filers. When we include housing expenditures in the dependent variable, the patterns found in Table 5 remain.

Finally, Table 6 presents three specifications that are similar to the ones presented in Lehnert and Maki (2002) (LM from now on), who also examine the effect of the exemptions on household consumption. The previous specifications differ from LM in two significant ways. First, they use the Consumer Expenditure Survey (CE) rather than the PSID. This is significant because the CE does not include questions regarding bankruptcy. Therefore, LM include filers and non-filers in the same specification and cannot identify whether the households ever filed. We presented the results of a Chow test that indicate that the consumption behavior of filers and non-filers is significantly different. Comparing the results from column I of Table 2 for the filers to the results from the first column of Table 4, we find that the coefficients on the exemptions have the opposite signs. If we were to group filers and

non-filers, we would expect the coefficients to be closer to zero, which could help explain why we (and LM) have a difficult time finding statistically significant results.

Second, LM address the question of whether households' consumption in states with less generous exemptions is more sensitive to changes in income than households' consumption in states with more generous exemptions. This means that they use a different empirical model and different specification. To test the LM hypothesis, we follow their specifications and create exemption quartile dummy variables and interact these with the change in log consumption.

In Table 6, we present the results of this test. The first column uses all households, while the second column only uses homeowners and the third column only uses renters, following LM. Eight coefficients are presented in the table for each sample. The exemption coefficients are the coefficients on the four exemption quartiles. The interaction coefficients are the coefficients for the change in log income times the four exemption quartiles, which are the coefficients of interest for the LM test. The hypothesis is that households that live in states with less generous exemptions should have a larger (absolute) coefficient than households that live in states with more generous exemptions.

Our results do not support this hypothesis, but they are similar to the results in LM. In absolute magnitudes, the households in the bottom quartile have a smaller reaction to changes in income than households in the top quartile. The test that the two coefficients are equal cannot be rejected at the 10 percent level of significance. LM further separated their sample by debt status – zero debt, low debt, or high debt. When we do this, the results do not change significantly.

Therefore, we find little evidence that households that live in states with less generous exemptions have a larger reaction to changes in income than households that live in states with more generous exemptions. When we separate by homeowner status following LM, our results remain similar to theirs. For homeowners, there is again little evidence to support their hypothesis. While they find some evidence to support the hypothesis for moderate-debt households that rent, we do not.

Overall, we find mixed evidence for the effect of the exemptions on the consumption of non-filers. The exemption coefficients were significant in some specifications, but they were not robust to

specification changes. Perhaps more significantly is the fact that the coefficients are significant using a sample from 1993 and 1995, but the coefficients are not significant using a sample from 1994. Further, we do not find evidence to support the hypothesis developed in Lehnert and Maki that households have smaller changes in consumption in reaction to negative income shocks.

One promising result is that the coefficient on the unlimited exemption is positive and significant when housing is used as the measure of consumption. This coefficient is robust to specification changes, and the magnitude of the effect is not insignificant. We find that the change in consumption is 3.4 percent higher for households living in states with an unlimited exemption.

VI. Conclusion

Is consumption smoothing one of the benefits to filing for bankruptcy? Filing for personal bankruptcy is often viewed as a "free-lunch" for the household. If this is true, then we should see an increase in consumption for those households which use the bankruptcy system as a way to run from their debts. We find evidence that filing under chapter 7 may be a "free-lunch." Households using the chapter 7 procedure experienced an increase in consumption in the immediate years around the filing date of 14-16 percent on average. However, we also find evidence that filing under chapter 13 causes a decrease in consumption in the amount of 22.7 percent in the year prior to filing. These results may help explain the push in Congress to move more household from filing for Chapter 7 into Chapter 13.

Given that we found that there is a consumption smoothing benefit to filing for bankruptcy, we addressed an additional question. Do households that live in states with more generous bankruptcy laws have a larger consumption benefit? We find that an increase in the exemption by 10 percent increases the consumption smoothing ability of households by approximately 1 percent.

That this latter consumption smoothing benefits are small should not be surprising. While UI and TANF provide cash transfers, the benefits of bankruptcy do not translate into consumption smoothing as cleanly. A marginal increase in the benefit to filing implies that the household either has more dischargeable debt or is allowed to keep more property. The discharge of debt can free up income for current consumption, but keeping additional property does not necessarily imply consumption smoothing

*as we measure it.*¹⁶ Further, not all households are able to take advantage of living in a state with generous exemptions. At least half of the bankruptcy filers had liquid wealth holdings that were less than any state's total exemptions.

One interesting area of bankruptcy research that this relates to is the research on the effect of the bankruptcy exemptions on the filing rates across states. Existing research finds that states with higher exemptions do not necessarily have higher filing rates – some research finds a significant effect while other research does not. One explanation for these conflicting findings is that the benefit to filing does not change significantly when the exemptions are higher, as shown here. If the benefit to filing is only slightly higher in states with higher exemptions, then you would not expect to find a large difference in the filings rates, *ceteris paribus*.

¹⁶ The actual filing for bankruptcy more directly helps households *asset smooth*, rather than consumption smooth. Bankruptcy helps consumption smooth through the discharge of debts, and it helps asset smooth by protecting assets. This is something that we do not address here, but it could be an interesting research topic.

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Table 1 - Difference-In-Differences Estimates of the Impact of Filing on Consumption ($\Delta \ln$)

	Specification		
	I	II	III
Δ filed	0.0807 (0.0647)	--	--
Δ chapter 7	--	0.1454 (0.0749)	0.1691 (0.0744)
Δ chapter 13	--	-0.0318 (0.1279)	-0.0713 (0.1269)
Δ chapter 7 (lead)	--	--	0.0819 (0.0931)
Δ chapter 13 (lead)	--	--	-0.2271 (0.1108)
Number of Observations	18,020	18,020	13,855

Notes: The standard errors in parentheses are corrected using the Huber/White procedure. Each of the three specifications include the following controls for time-varying household effects: the change in family needs, the change in the age of the head of the household, the change in household income, the change in family size, dummies for marital status and changes in the gender of the head of the household. The specifications also include state-level time-varying controls such as the change in state output growth, change in unemployment rate and a dummy variable for whether the state has unlimited homestead exemption. Each specification also contains a full set of time dummies.

Table 2: Cross-section of bankruptcy filers (in the year they filed)

Total food expenditures	I		II	
	<i>Coef.</i>	<i>Std. Err.</i>	<i>Coef.</i>	<i>Std. Err.</i>
Maximum total exemptions/10,000	-0.1020	0.0495 *	-0.1150	0.0450 *
Maximum total exemptions squared/10,000	7.8E-07	4.4E-06 **	8.2E-07	4.0E-07 *
Unlimited homestead exemption	-0.0059	0.1170	-0.1471	0.1110
Age	0.0042	0.0042	0.0056	0.0039
Black	-0.4411	0.2601 **	-0.6883	0.2415 *
White	-0.3372	0.2305	-0.5832	0.2127 *
Married	0.0293	0.1252	-0.0385	0.1150
Gender	0.2472	0.1489 **	0.3547	0.1434 *
HS dropout	0.1341	0.1770	0.1468	0.1593
HS grad	0.1034	0.1675	0.1912	0.1525
Some college	0.0957	0.1781	0.2488	0.1643
Change in family food needs	-0.5729	0.3116 **	-0.1652	0.2925
Change in family size	0.1679	0.0717 *	0.1204	0.0662 **
State unemployment rate	0.0074	0.0322	-0.0033	0.0294
Average state AFDC benefits	0.0003	0.0006	0.0002	0.0005
Average state UI benefits	-0.0025	0.0027	-0.0021	0.0025
State/year house price index	-0.0008	0.0023	-0.0025	0.0021
Change income - bottom quartile	-----	-----	-0.0914	0.1027
Change income - second quartile	-----	-----	-0.2233	0.1089 *
Change income - third quartile	-----	-----	-0.2375	0.1175
Lag of liquid wealth/10,000	-----	-----	-0.0553	0.0111 *
Constant	0.3727	0.5143	0.9638	0.4873
F-statistic (Prob. > F)	1.97 (0.012)		3.23 (0.00)	

Notes: The number of observations equals 131, using data on bankruptcy filers from 1991-1996. Each specification also contains a full set of time dummies. The dependent variable in all specifications is $\Delta \ln C$. * indicates that the coefficient is significant at the 5 percent level, while ** indicates that it is significant at the 10 percent level.

Table 3: Cross-section of bankruptcy filers – bankruptcy chapter

Chapter 7 versus Chapter 13		
	<i>Coef.</i>	<i>Std. Err.</i>
<i>Chapter 7</i>		
Dummy variable for Chapter 7	0.6840	0.5292
Maximum total exemptions*dummy/10,000	-0.1430	0.0581 *
Max total exemptions squared*dummy/10,000	9.9E-07	5.1E-07 **
Unlimited exemption * dummy	0.0785	0.1629
<i>Chapter 13</i>		
Dummy variable for Chapter 13	0.5140	0.5659
Maximum total exemptions * dummy/10,000	0.0268	0.1130
Max total exemptions squared * dummy/10,000	-5.5E-07	1.1E-06
Unlimited exemption * dummy	-0.0726	0.1952

Notes: The number of observations equals 131, using data on bankruptcy filers from 1991-1996. Each specification also contains a full set of time dummies. Each specification includes the demographic characteristics and state characteristics (see Table 2 for a list of the variables). * indicates that the coefficient is significant at the 5 percent level, while ** indicates that it is significant at the 10 percent level.

Table 4: Cross-section of non-filers (1995)

<i>Expenditure used:</i>	Food		Housing		Food + Housing	
	<i>Coef.</i>	<i>Std. Err.</i>	<i>Coef.</i>	<i>Std. Err.</i>	<i>Coef.</i>	<i>Std. Err.</i>
Maximum total exemptions/10,000	0.0154	0.0089 **	0.0081	0.0068	0.0235	0.0081 *
Maximum total exemptions squared/10,000	-1.1E-07	7.7E-08	-1.0E-07	5.8E-08 **	-2.1E-07	7.0E-08 *
Unlimited homestead exemption	0.0049	0.0196	0.0264	0.0149 **	0.0341	0.0179 **
Age	-0.0009	0.0005 **	0.0005	0.0004	0.0004	0.0005
Black	-0.1854	0.0484 *	-0.0866	0.0367 *	-0.1484	0.0441 *
White	-0.1623	0.0452 *	-0.0844	0.0343 *	-0.1190	0.0412 *
Married	0.0065	0.0178	0.0117	0.0135	0.0074	0.0162
Gender	-0.0260	0.0202	-0.0078	0.0153	-0.0261	0.0184
HS dropout	0.0207	0.0210	-0.0373	0.0159 *	-0.0261	0.0192
HS grad	-0.0026	0.0169	-0.0059	0.0129	0.0057	0.0155
Some college	-0.0169	0.0176	0.0059	0.0134	0.0207	0.0161
Change in family food needs	0.2142	0.0757 *	0.0163	0.0574	0.1329	0.0690 **
Change in family size	0.0981	0.0143 *	0.0591	0.0109 *	0.0797	0.0131 *
State unemployment rate	-0.0012	0.0071	-0.0001	0.0001	-0.0001	0.0001
Average state AFDC benefits	-5.2E-05	9.9E-05	4.5E-04	2.8E-04 **	1.4E-04	3.4E-04
Average state UI benefits	6.5E-05	3.7E-04	3.1E-03	5.4E-03	-4.5E-03	6.5E-03
State/year house price index	2.4E-04	3.5E-04	2.3E-04	2.7E-04	1.4E-05	3.2E-04
Constant	0.1266	0.1007	-0.0227	0.0764	0.0830	0.0918
F (17, 3540)	6.41		3.86		5.28	

Notes: The number of observations equals 3,558, using the 1995 wave of the PSID. * indicates that the coefficient is significant at the 5 percent level, while ** indicates that it is significant at the 10 percent level.

Table 5: Cross-section of non-filers - specification checks

Include change in income and lag of wealth (1995)		
	<i>Coef.</i>	<i>Std. Err.</i>
Maximum total exemptions/10,000	0.0152	0.0089 **
Max total exemptions squared/10,000	-1.1E-07	7.7E-08
Unlimited exemption	0.0051	0.0196
Change income - bottom quartile	-0.0178	0.0203
Change income - second quartile	-0.0370	0.0185 *
Change income - third quartile	0.0056	0.0179
Lag of liquid wealth/10,000	-1.2E-04	1.8E-04

Food (1994)		
	<i>Coef.</i>	<i>Std. Err.</i>
Maximum total exemptions/10,000	4.5E-04	9.2E-03
Max total exemptions squared/10,000	-3.8E-08	7.7E-08
Unlimited exemption	0.0142	0.0206

Food (1993)		
	<i>Coef.</i>	<i>Std. Err.</i>
Maximum total exemptions/10,000	-1.7E-02	7.4E-03 *
Max total exemptions squared/10,000	1.3E-07	6.1E-08 *
Unlimited exemption	0.0111	0.0172

Notes: The number of observations equals 3,558 in the first panel. The panel from 1994 uses 5,596 observations, and the 1993 panel uses 5,461 observations. Each specification includes the demographic characteristics and state characteristics (see Table 4 for a list of the variables). * indicates that the coefficient is significant at the 5 percent level, while ** indicates that it is significant at the 10 percent level.

Table 6: Cross-section of non-filers – alternate hypothesis test

	All households		Homeowners		Renters	
	<i>Coef.</i>	<i>Std. Err.</i>	<i>Coef.</i>	<i>Std. Err.</i>	<i>Coef.</i>	<i>Std. Err.</i>
<i>Change in income interacted with exemption quartiles</i>						
Change income * Bottom quartile	-0.0217	0.0167	-0.0227	0.0186	-0.0127	0.0310
Change income * Second quartile	0.0031	0.0223	0.0143	0.0265	-0.0024	0.0377
Change income * Third quartile	0.0127	0.0163	0.0243	0.0204	-0.0033	0.0261
Change income * Top quartile	-0.0578	0.0171 *	-0.0308	0.0272	-0.0691	0.0233 *
<i>Exemption coefficients</i>						
Bottom quartile	0.1553	0.1019	0.2671	0.1204 *	-0.0505	0.1796
Second quartile	0.1724	0.1071 **	0.2853	0.1261 *	-0.0291	0.1893
Third quartile	0.1710	0.1052 **	0.2077	0.1233 **	0.0782	0.1875
Fourth quartile	0.1602	0.1001	0.2310	0.1185 *	0.0137	0.1763
	n	3,521	1,998		1,523	
	F (Prob>F)	5.71 (0.00)	5.39 (0.00)		3.22 (0.00)	

Notes: Data come from the 1995 wave of the PSID. Each specification includes the demographic characteristics and state characteristics (see Table 4 for a list of the variables). * indicates that the coefficient is significant at the 5 percent level, while ** indicates that it is significant at the 10 percent level.

Appendix – A simple theoretical model

This appendix contains a simple two-period model of the decision to file for bankruptcy. Within this model, households that file for bankruptcy consumption smooth. In the first period, household consumption depends on income (Y_1), borrowing (B), and an initial endowment of wealth (W_0). The household borrows B and agrees to repay $B(1+r)$ next period, but the household retains the right to file.

In the second period, the household again receives income, Y_2 , but there could be an unexpected negative income shock in the second period. Since the household retains the option to file for bankruptcy in the second period, consumption in this second period depends on whether the household files. If the household does not file for bankruptcy,

$$C_2^N = Y_2 - B(1+r) + W_1. \quad (A1)$$

C_2^N equals consumption when the household does not file; it can also be thought of as consumption in a world without bankruptcy. If bankruptcy protection did not exist, the household consumes C_2^N ; W_1 equals the wealth of the household carried over from the first period. Since households can purchase durable goods in the first period, W_1 does not necessarily equal W_0 .

If the household files for bankruptcy,

$$C_2^F = Y_2 - R + E, \quad (A2)$$

where C_2^F equals consumption if the household files, R equals the amount repaid in bankruptcy, and E equals the bankruptcy exemptions. The amount repaid depends on several factors including whether the household has secured debts that it wishes to retain. However, unsecured debts, such as credit card debts and medical debts are dischargeable in bankruptcy. Thus, $R < B(1+r)$ if the household has some unsecured debts. The last term in (A2) equals the exempt property. If $W_1 > E$, the household loses some of its wealth when it files for bankruptcy. If $W_1 \leq E$, then the household loses no assets in bankruptcy, and $E = W_1$ in (A2).

The household only files for bankruptcy if $C_2^F > C_2^N$. Even if this condition is met, the household may not necessarily file for bankruptcy if there are additional costs to filing, such as stigma

costs or lost access to credit. If $C_2^F \leq C_2^N$, then the household does not file for bankruptcy. To determine the consumption smoothing benefits, suppose household i files for bankruptcy and consumes C_2^F . If this household could not file because bankruptcy protection did not exist, then it would be forced to repay its loan in full and consume C_2^N , assuming the household cannot default on its debt. Therefore, the consumption smoothing benefit equals $C_2^F - C_2^N > 0$. This benefit increases as the bankruptcy exemption increases, if wealth exceeds the exemption ($W_i > E$).

While this theoretical model excludes some of the complexities in bankruptcy, it still provides the two basic needs for this paper. First, the model shows that there is a consumption smoothing benefit to bankruptcy. Second, for some households, this benefit increases as the exemptions increase. At worst, an increase in the exemptions does not change the consumption smoothing benefit.