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## Is the Bankruptcy Flag Binding? Access to Credit Markets for Post-Bankruptcy Households

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## **Is the Bankruptcy Flag Binding? Access to Credit Markets for Post-Bankruptcy Households**

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### **Abstract**

Legally, a bankruptcy flag can appear on a bankruptcy filer's credit report for up to ten years after the filing. This bankruptcy flag affects an individual's credit score, and therefore the individual's access to credit. In this paper, we test whether the bankruptcy flag is a binding constraint in two ways. First, we test whether the consumption of bankruptcy filers exhibits excess sensitivity to changes in income, which is a traditional method by economists to test for borrowing constraints. Second, we use an explicit question on whether a household was turned down for a mortgage loan or discouraged from applying for a mortgage loan.

Using the Panel Study of Income Dynamics (PSID), our results indicate that post-bankruptcy consumers exhibit excess sensitivity likely due to the bankruptcy flag. Preliminary results also suggest that post-bankruptcy households are more likely to be denied a mortgage, using both the PSID and the Survey of Consumer Finances (SCF).

All views expressed in this paper are those of the author and do not reflect the views or policies of the Bureau of Labor Statistics (BLS) or the views of other BLS staff members.

## **I. Introduction**

Legally, a bankruptcy filing can appear on an individual's credit report for up to ten years. Musto (2004) finds evidence that the bankruptcy flag does influence access to unsecured credit. Using a panel of credit card data, Musto follows individuals before, during, and after the bankruptcy flag is removed from their credit report. He finds that those households with relatively good credit scores enjoy significantly more access to credit when the bankruptcy flag is removed, indicating that the bankruptcy flag decreased access to credit for the ten year span.

In this paper, we complement the research of Musto by examining how filing for personal bankruptcy affects access to credit in the ten years after bankruptcy. In 1996, the Panel Study of Income Dynamics (PSID) included questions on whether individuals ever filed for bankruptcy. And, in the 1998 and 2001 Survey of Consumer Finances (SCF), households were asked whether they ever filed for bankruptcy. Using two different methods, we use this information to examine the effects of bankruptcy on access to credit.

First, in the standard rational expectations permanent-income hypothesis (REPIH) model, consumption growth should not depend on idiosyncratic variables, such as lagged household income. However, in the presence of borrowing constraints, such as those imposed by filing for personal bankruptcy, consumption may exhibit excess sensitivity. We use this insight to test whether the bankruptcy flag is a binding borrowing constraint, using the PSID. Empirically, we find that post-bankruptcy households do exhibit excess sensitivity to lagged income, which suggests that the bankruptcy flag affects access to credit. Further, when the flag is removed from the credit report, consumption of these households no longer exhibits excess sensitivity.

Second, we use a more direct test of whether the flag affects access to credit. For this test, we use both the PSID and the SCF. Both surveys ask questions about households being turned down for loans. In both data sets, we find that households are more likely to be turned down for a loan if they have the bankruptcy flag on their credit report.

## **II. Personal bankruptcy background information**

### **A. Chapter 7 and chapter 13**

An individual filing for bankruptcy chooses between chapter 7 and chapter 13. Of the 1.56 million personal bankruptcy filings in 2002, 1.10 million (70.4 percent) were filed under chapter 7. Under chapter 7, the debtor forfeits all assets exceeding the exemption levels to the Bankruptcy Court. A bankruptcy trustee sells the non-exempt assets and distributes the money to the creditors. In return, a chapter 7 filing discharges most unsecured debts. Secured debts are discharged only if the debtor forfeits the collateral.

The other option when filing for personal bankruptcy is chapter 13. Filers do not turn over any assets to the bankruptcy court but instead propose a repayment plan for a portion of the outstanding debts. Essentially, chapter 13 filers put themselves on a strict budget during this repayment plan. If the repayment plan is successfully completed, the filer receives a discharge of some of the unsecured debts. If the plan is not completed, the filer does not receive the discharge. The de facto rule regarding repayment is that chapter 13 filers must repay at least as much as they would have repaid if they had filed under chapter 7, but chapter 13 filers do not have to turn over any assets to the bankruptcy court. Because of the repayment plan, chapter 13 is less popular than chapter 7.

### **B. Affect of bankruptcy on credit history**

Regardless of chapter choice, the bankruptcy filing appears on an individual's credit history for ten years (Fair Credit Reporting Act; *FCRA Section 605 (a)(1)*). Once the ten-year window passes, the credit bureaus can no longer report the bankruptcy filing on an individual's credit report. Bankruptcy is unique in this aspect because all other adverse events (e.g., civil judgments and tax liens) can appear on a credit history for only seven years (*FCRA Section 605 (a)*).

Interestingly, just because the bankruptcy information does not appear on the credit report after ten years, this does not mean that the information is lost. If an individual has an existing relationship with a creditor within the ten-year post-bankruptcy window, the creditor can still maintain its own record of the bankruptcy filing after the flag is removed from the credit report. The FCRA act only applies to credit

bureaus; it does not apply to creditors that obtained this information about the bankruptcy filing during the ten-year window. Existing creditors presumably continue to use the bankruptcy information even after it is removed from the credit report.

The other relevant feature of bankruptcy law is that a filer must wait six years after the discharge of debts before he can legally file for bankruptcy again. While the individual may default on debt during this time by not repaying bills, creditors can take legal action to garnish wages or repossess assets. Consequently, this feature of bankruptcy law may increase the willingness of some creditors to lend to post-bankruptcy individuals during the first six years after the discharge of debts. Musto (2004) finds that post-bankruptcy individuals have less access to credit, but they do have access to limited credit lines.

Combined, there are two countervailing forces. First, the bankruptcy flag on the credit report decreases access to credit by signaling a poor credit risk. Second, the fact that the individual cannot file for bankruptcy until six years after the previous discharge may increase access to credit. Overall, the net effect would still be a decrease in access as shown by Musto (2004), but it might be more than it would have been if bankruptcy filers were allowed to file for bankruptcy again at any point after the initial filing.

### **III. Data**

#### **A. Panel Study of Income Dynamics**

For most of the empirical work in the paper, we use the Panel Study of Income Dynamics (PSID), which is a longitudinal household survey that began in 1968. In addition to having longitudinal information on expenditures, the 1996 wave of 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 did file, they were asked under which chapter they filed and in what year(s) they filed. Because the bankruptcy information is only available in the 1996 wave, households not in the 1996 wave of the PSID are excluded from our sample.

There are two other important aspects of the PSID data. First, the PSID includes expenditure information, which we use to test for excess sensitivity. The PSID includes information regarding food eaten out, food eaten at home, and food stamp usage. We sum these components to create one food

expenditure variable. Since the 1988 and 1989 waves of the PSID do not include the food questions, we exclude these years from our sample.<sup>1</sup> Second, the 1996 wave of the PSID also includes questions on whether households were ever turned down for a home loan. Homeowners were asked whether they took steps to apply for a second mortgage or other secured line of credit against their home. Renters were asked whether they ever took steps to apply for a home loan. For those that did take steps for either a second loan or a first mortgage, they were also asked whether they were discouraged from borrowing and why they were turned down for the loan. We classify any household that took steps to apply for a loan but did not receive a home loan as being constrained, regardless of the reason they were turned down.

Summary statistics for the main variables from the PSID are presented in Table 1. All dollar-denominated variables are in real, 1996 dollars. The summary statistics are presented by filing status. The first group, post-bankruptcy constrained, is our group of constrained bankruptcy filers that are within the ten-year window after they filed for bankruptcy. There are 325 households, with 1,478 observations (household years). The second group, the pre-bankruptcy households, includes 159 households in the five years before the household filed for bankruptcy.<sup>2</sup> Finally, the third group is the non-filers, which includes the 5,937 households (28,500 observations) that did not file for bankruptcy in the PSID.

In terms of demographics, the summary statistics follow patterns seen in the bankruptcy literature (Fay, Hurst, and White, 2002). Bankruptcy filers are younger and slightly more likely to be divorced than non-filers. And, there is little difference in race and education between filers and non-filers.

## **B. The Survey of Consumer Finances**

When conducting the second test, we also use the Survey of Consumer Finances (SCF) from 1998 and 2001. The SCF is a cross-sectional survey sponsored every three years by the Board of Governors of the Federal Reserve System. The SCF provides detailed information on the income, assets, liabilities,

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<sup>1</sup> The timing of the food questions is not altogether clear. Generally, the PSID questions are asked in March to June of the survey year, and the food at home and food away questions refer to how much is purchased in an average week. Zeldes (1989) assumes that information asked in year  $t$  is for year  $t$  consumption, while others have assumed that year  $t$  questions refer to year  $t-1$  consumption. In this paper, we follow the Zeldes interpretation.

credit experiences, and demographic characteristics of U.S. households. Beginning in 1998, the SCF began asking questions regarding personal bankruptcy. We use this bankruptcy information and questions regarding credit access to conduct the second test. The credit questions in the SCF are very similar to the ones used in the PSID. One difference, however, is that the SCF includes all types of loans, not just mortgage related loans. Importantly, the SCF identifies the type of loan the household applied for but did not receive. Consequently, we can use an identical specification as the one used in the PSID, and we can use a broader definition of loans as well.

## IV. Results

### A. Test for Excess Sensitivity

To begin, we present results testing for the excess sensitivity of consumption. This test is derived from the economics literature on liquidity constraints (Zeldes 1989). If households are liquidity constrained or borrowing constrained, then the household is unable to borrow in anticipation of a positive income shock. Unable to borrow, the household will not be able to consume the optimal amount. When a positive income shock actually occurs, consumption will jump up as well. This jump in consumption is the excess sensitivity of consumption. If there were no borrowing constraint, the household would have borrowed money in anticipation of the positive shock. And, at the time of the shock, consumption growth would not be sensitive to the predictable change in income.

To test for the presence of excess sensitivity, the estimated equation takes the form:

$$\begin{aligned} \Delta \ln c_{i,t+1} &= \alpha_1 + \beta_1' X_{i,t+1} + \gamma_1 \ln y_{it} + \varepsilon_{it}^1 \\ \text{if } B_{it} &= 1 \end{aligned} \tag{1}$$

where  $B_{it}$  denotes whether the household is in the ten years after a filing; the dependent variable is the growth in food consumption from  $t$  to  $t+1$ , the vector  $X_{i,t+1}$  contains household level information known at time  $t+1$  that may influence tastes or preferences. Previous work has included information such as the age of the household head, and the change in family size. Finally,  $y_{it}$  equals household income in year  $t$ .

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<sup>2</sup> In the data, there are 325 post-bankruptcy households and 159 pre-bankruptcy households. The remaining households filed for bankruptcy before 1986 but after 1977, which put them in the ten-year post-bankruptcy window

Under the standard model of Hall (1978), variables in the consumers' information set should be uncorrelated with consumption growth. If households are not liquidity constrained, the coefficient on the log of lagged disposable income ( $\gamma_l$ ) should be statistically insignificant. However, if post-bankruptcy households face binding liquidity constraints, then  $\gamma_l$  should be negative and statistically significant.

Table 3 provides the parameter estimates of the Euler equation for bankruptcy filers that are within ten years of filing. We perform pooled OLS in each specification with year dummy variables. The year dummy variables control for aggregate economic fluctuations, which could be a significant problem when the time span of the panel is relatively short, because there may be common components in the forecast errors across individuals. Our sample contains ten years of data (1985-1987 and 1990-1996), which is longer than most previous work and increases the likelihood that aggregate effects are averaged out. In fact, we only find a marginal difference between the point estimates from a model with and without time effects and the conclusions are unchanged.

To compare our results to some of the previous literature, all three columns represent specifications similar to those used in the previous research. Column one represents the specification proposed in Zeldes (1989). In addition to the lag of income, this specification contains: the age of the household head, age squared, and the growth in food needs. Column two represents the specification proposed by Jappelli, Pischke, and Souleles (1998) and uses the change in the number of adults in the household, and the change in the number of children in the household in place of the growth of food needs.

As mentioned earlier, the coefficient on lagged income is the parameter of interest. We do find evidence of excess sensitivity in column one and column two. This suggests that post-bankruptcy filers exhibit excess sensitivity to income, meaning that the bankruptcy flag is binding.

A well documented fact is that excess sensitivity can arise from several competing alternatives. (see Hall and Mishkin 1987; and, Garcia et al. 1997). Specifically, behavior such as precautionary saving and myopia can generate excess sensitivity (see Shea 1995, and Garcia et al. 1997). Households with a

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but that also means that their pre-bankruptcy period is not part of our sample.

precautionary motive (or buffer-stock savers) have a target wealth-to-income ratio and adjust consumption and savings to maintain this target ratio (Carroll 1997). If there is a precautionary motive to savings, the expected variance of consumption growth affects consumption growth (Jappelli and Pistaferri 2000). A household with low income relative to permanent income will have a high expected variance and higher consumption growth. Without a measure of the expected variance, lagged income will be negatively correlated with consumption growth, which could explain the pattern seen in the first three columns of Table 3.

A myopic or rule-of-thumb consumer has a constant marginal propensity to consume, which violates the REPIH (Garcia et al., 1997). Myopia differs from liquidity constraints, because a liquidity or borrowing constrained consumer saves in anticipation of a negative income shock and therefore smooths expected decreases in income. A liquidity constrained consumer, however, cannot borrow in anticipation of a positive income shock. This suggests that a liquidity constrained household is excessively sensitive only to predicted increases in income. Alternatively, a myopic consumer is excessively sensitive to both predicted increases and predicted decreases in income.

We believe that households that have filed for bankruptcy are generally not precautionary savers, which seems like a reasonable assumption; by filing for bankruptcy, these households have shown that they are not likely to be saving to insulate consumption against negative income shocks. However, we would like to rule out formally the possibility that they are myopic consumers. If liquidity constraints are the source of sensitivity, post-bankruptcy households should exhibit sensitivity to predicted income increases but not to predicted income decreases. Under myopic consumption, the household should respond symmetrically to both increases and decreases in predicted income.

To test whether post-bankruptcy households are liquidity constrained or myopic, there is a two stage process. In the first stage, predicted income growth must be estimated. To estimate predicted income growth, we estimate the following equation by pooled OLS:

$$\Delta y_{t+1} = \varphi + \sum_{j=t-2}^t \eta \Delta y_j + \theta \Delta(\text{weeks}_{t+1}) + \beta X_{t+1} + \tau_{t+1} + \Delta u_{t+1}. \quad (2)$$

We use the estimated coefficients from this specification to obtain values for predicted income growth ( $\Delta\hat{y}_{t+1+}$ ) and predicted income decline ( $\Delta\hat{y}_{t+1-}$ ). The estimated coefficients are presented in Appendix Table A1. This specification for the change in income follows Altonji and Siow (1987) in using lags of income growth to predict current income growth.

In Table 3, column three examines the possible asymmetry in excess sensitivity. The results confirm that the existence of excess sensitivity is due to liquidity constraints and not myopia for our sample of post-bankruptcy households. While the point estimate on the negative income change is statistically insignificant, the bankrupt households are sensitive to the positive income changes, as expected if they are liquidity constrained and not myopic.

An additional concern in our analysis is that our sample of post-bankruptcy households appears liquidity constrained for some reason other than or in addition to the bankruptcy flag on their credit report. Can we attribute our results solely to the post-bankruptcy flag? Or, are these households constrained in all periods for other reasons, such as low assets? Indeed, the behavior of post-bankruptcy households may be observationally equivalent to low-asset households. While we cannot definitively state whether the results in Table 3 are due to the bankruptcy flag or something else, we attempt to address this issue. We test whether households that filed for bankruptcy display excess sensitivity in the five years before filing for bankruptcy and in the time span from eleven to fifteen years after the following (representing the time frame immediately after the flag is removed). Excess sensitivity in either of these time periods suggests that the bankruptcy flag is not the source of the excess sensitivity.

Column (1) in Table 4 presents the point estimates on lagged income for both exercises, and column (2) uses the predicted changes in income. The rows correspond to the pre-bankruptcy and post-flag periods respectively. There is no evidence of excess sensitivity in either test or for either group. The evidence presented in Tables 3 and 4 supports the proposition that households in the post-bankruptcy period are liquidity constrained. This result is robust to various specifications and tests of competing hypothesis. Generally, post-bankruptcy households exhibit stronger excess sensitivity than other groups found to be constrained by the previous literature (see Zeldes 1989 and Jappelli et al 1997).

## **B. Empirical test for access to credit**

While the test for excess sensitivity is a preferred test of economists, the PSID and SCF allow a more direct method to test whether the bankruptcy flag affects access to credit. This test uses variables identifying whether households were turned down for a loan or discouraged from applying for a loan. In this test, we examine whether the bankruptcy flag increases the probability a household is turned down for a loan. To conduct this test, we use both the PSID and SCF.

In 1996, the PSID asked households whether they took steps to apply for a home loan (a second mortgage or home equity line for homeowners and a first mortgage for renters). If the household did take steps, they were also asked whether they received the loan. As our dependent variable, we define a variable that equals one if the household was not given the loan, and zero otherwise.

In every survey year, the SCF asks whether households were turned down for a loan and whether they were discouraged from applying. The biggest advantage of the SCF is that the loan questions refer to all types of loans, not just home loans. The biggest disadvantage of the SCF is that the year the household was applied for the loan is not known. The questions only refer to loans within the last five years, without specifying an exact year.

The hypothesis is that the presence of the bankruptcy flag should make households more likely to be turned down for a loan. Not conditioning on any factors except bankruptcy status, Table 2A presents the percentage of households that were denied access to credit. In the PSID, 3.1 percent of all households were denied access to a mortgage loan. In the SCF, 3.6 percent were denied access to a mortgage loan, while over 23 percent were turned down (or discouraged) for any type of loan. As expected, in both the PSID and SCF a higher percentage of post-bankruptcy households were denied access to secured loans. For mortgage loans, 5.1 percent and 10.2 percent of bankruptcy filers one to five years after bankruptcy were denied access in the PSID and SCF, respectively. Six to ten years after bankruptcy, the percentages are about the same. The largest difference between the two data sets is in the years after the bankruptcy flag is removed from the credit report. In the PSID, only 1.4 percent were denied a home loan, while 10.9

percent were in the SCF. This could be because of slightly different definitions in how the PSID and SCF define the loan questions, but that alone should not account for the large difference.

Table 2B provides some insight into why these households were denied access in the PSID. Of the households that took steps to apply but were discouraged from continuing, almost 13 percent of households listed credit history problems as one of the reasons they were denied access to credit.

Table 5 presents the results, using the probit method for this test. The dependent variable again equals one if the household was turned down for a loan or discouraged from applying. In the PSID, the loan only refers to a mortgage loan or home equity loan. In the SCF, we present two different specifications. The first follows the PSID definition and only uses mortgage and other home loans. The second includes all loans.

The key independent variables are three variables for the bankruptcy flag. The first variable equals one if the household filed for bankruptcy in the previous five years. The second variable equals one if the household filed six to ten years ago. Finally, the last key variable equals one if the household filed for bankruptcy eleven to fifteen years ago. Again, we want to determine whether it is the bankruptcy flag that might be affecting access to credit, not some other variable that might be correlated with the bankruptcy flag.

The other variables in the specification include variables that may affect access to credit and are similar to work by Cox and Jappelli (1993), which looked at access to credit using the Survey of Consumer Finances. The variables are: income, net worth, education, age, marital status, race, family size, employment status, and region dummy variables. The SCF does not include the region variables, so we exclude these dummy variables from the SCF results.

The results in Table 5 closely match what is seen in Table 2A. For the PSID, the coefficients for an active bankruptcy flag are positive and significant, indicating that the presence of the flag increases the probability of being turned down for a loan. Importantly, the coefficient for a bankruptcy filing more than ten years ago is statistically insignificant. For the SCF, all three coefficients are statistically significant, suggesting that filing for bankruptcy still affects access to credit after the bankruptcy flag is

removed from the credit report. In part, this effect might be due to the timing of the bankruptcy and loan questions in the SCF. We conducted sensitivity analysis regarding the timing of these variables, and the results were similar. These results are not presented here but will be in future versions of this paper. In part, it may also be the fact that bankruptcy filers are more likely to be discouraged and not actually apply. This is another issue to be addressed in future versions.

Comparing the results with only mortgage-type loans in the SCF and all loans in the SCF, the results look similar. The biggest difference is that income and net worth are significant predictors in the all loans specification but not the mortgage specification.

In results not presented here, we wanted to determine whether the penalty for filing for bankruptcy has changed over time. Ultimately, we would like to compare the PSID results from 1994 to the SCF results from 1998 and 2001, but we are not confident in our ability to do this yet. However, we can compare 1998 and 2001 in the SCF. To accomplish this, we interact a year dummy variable with the three bankruptcy variables. For the years when the bankruptcy flag is on the credit report, we fail to reject the hypothesis that the coefficients changed over time. Not surprisingly, the penalty does not seem to have changed between 1998 and 2001. It may take additional years of data to see whether there was a change in the penalty.

Finally, we are also concerned that non-filers may not be the proper control group in these regressions. Maybe the relevant group is not those households that never filed, but households that filed for bankruptcy but do not have the flag currently on the credit report. If we restrict the SCF regressions to just those that ever filed for bankruptcy, the coefficient on the two dummy variables for the years when the bankruptcy flag is on the credit report remain positive and statistically significant.

This latter work is still preliminary, and there are a few improvements that are underway. First, there may be an application bias, meaning that bankrupt households may be less likely to apply for a loan; there may be selection into who applies for a loan. We will use questions in the PSID and SCF to determine whether bankruptcy filers are less likely to apply for a loan. Second, there are several improvements on-going with the SCF data, as described above. We are also estimating the size of the

borrowing gap using the SCF. In essence, we address the question: how much more would those households with a bankruptcy flag on their credit report like to borrow? This gets at whether the flag limits access to credit, and it gets at the severity of the punishment.

## **VI. Conclusions**

The objective of this paper was to test whether the bankruptcy flag, which appears on the credit report for up to ten years after filing, limits access to credit. We find evidence that the flag is binding, using two distinct tests. The first test suggests that the consumption of bankruptcy filers is sensitive to income, which indicates that the bankruptcy flag does restrict access to credit. In the second test, the results suggest that the bankruptcy flag increases the probability a household is denied access to credit.

Our results complement the findings in Musto (2004) by providing another test of whether bankruptcy affects access to credit. There is on-going work with this second test that will hopefully address some additional interesting questions, including: Has the penalty from filing decreased or increased over time?

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**Table 1: Summary Statistics by bankruptcy status (1985-1995)**

	Post-bankruptcy ( $\leq 10$ years after filing)	Pre-bankruptcy ( $\leq 5$ years before filing)	Never filed
<i>Income and home equity (\$)</i>			
Total income	38,792 (25,746)	40,931 (28,095)	49,770 (52,240)
Financial income	88 (615)	107 (681)	32,530 (752,469)
<i>Consumption (\$)</i>			
Total food	5,796 (3,185)	5,451 (3,001)	5,629 (3,854)
Food needs	12,671 (5,204)	8,801 (6,183)	11,404 (5,083)
<i>Family Characteristics</i>			
Age of household head	39.7	37.5	45.0
Family size	3.2	3.2	2.9
Own home	0.472	0.515	0.646
Married	0.579	0.591	0.618
Single	0.108	0.108	0.148
Divorced/widowed	0.313	0.301	0.234
White	0.630	0.597	0.671
Black	0.338	0.383	0.310
Other race	0.032	0.020	0.019
High school dropout	0.229	0.173	0.233
High school graduate	0.410	0.454	0.339
Some college (no degree)	0.262	0.298	0.203
College graduate	0.099	0.075	0.225
<i>Number of observations</i>	1,478	342	28,500
<i>Number of households</i>	325	159	5,937

*Notes:* All data come from the Panel Study of Income Dynamics (1985-1995), and the non-food items are in real, 1996 dollars using the CPI-U-RS. Total food and food needs are in real, 1996 dollars using the item index for food. Standard deviations are in parentheses.

**Table 2A: Percent denied access for loan by filing status – PSID and SCF**

	PSID % denied Mortgage loans	SCF % denied Mortgage loans	SCF % denied All loans
All households	3.1	3.6	23.2
Filers one to five years after bankruptcy	5.1	10.2	66.6
Filers: six to ten years after	4.5	9.6	61.0
Filers: eleven to fifteen years after	1.4	10.9	52.6
Non-filers	2.9	3.1	20.5

**Table 2B: Reason turned down for loan – PSID only**

	<i>% given as reason (may give more than one answer)</i>
<b>Did not apply for loan</b>	
Interest rate too high	3.7
Down payment too high	7.3
Closing costs too high	1.0
Other	86.0
<b>Turned down for loan</b>	
Credit history problems	12.9
Too much debt	2.0
Income not high enough (or stable enough)	9.9
Couldn't make down payment	5.0
Withdrew loan on own	12.9
Other	57.4

**Table 3: Euler equation estimates (post-bankruptcy households)**

	(1)	(2)	(3)
Post-bankruptcy households ( $\leq 10$ years after filing)			
$y_t$	-0.0243* (0.0129)	-0.0228* (0.0133)	---
$\Delta \hat{y}_{t+1}^+$	---	---	0.0900* (0.0497)
$\Delta \hat{y}_{t+1}^-$	---	---	0.0404 (0.0567)
$Age_{t+1}$	0.0032 (0.0055)	0.0042 (0.0053)	0.0015 (0.0052)
$Age_{t+1}$ squared/100	-0.0062 (0.0060)	-0.0069 (0.0059)	-0.0040 (0.0058)
$\Delta$ adults $_{t+1}$	---	0.1613*** (0.0308)	0.1544*** (0.0307)
$\Delta$ children $_{t+1}$	---	0.1457*** (0.0283)	0.1416*** (0.0285)
$\Delta$ Annual Food Needs $_{t+1}$	0.3683*** (0.1205)	--	---
Constant	0.1743 (0.1621)	0.1342 (0.1589)	-0.0506 (0.1181)
<i>Observations</i>	1,478		

*Notes:* Robust standard errors are presented in parentheses. All data use the PSID (1985-1996). (\*\*\*), (\*\*), and (\*) represent significance at the 1, 5 and 10 percentiles respectively. The estimates presented in the table represent a model with year dummy variables. The dependent variable equals the log change in food expenditures. The predicted change in incomes ( $\Delta \hat{y}^+$  and  $\Delta \hat{y}^-$ ) are predicted using the specification in Appendix Table A1.

**Table 4: Euler equation estimates (post-bankruptcy households and pre-bankruptcy households)**

		(1)	(2)	
		$y_t$	$\Delta\hat{y}_{t+1}^+$	$\Delta\hat{y}_{t+1}^-$
(A)	<i>Pre-bankruptcy flag households</i>	-0.0058	---	---
	(1 to 5 years before filing) (n = 223)	(0.0317)	0.0956 (0.1246)	0.2808** (0.1256)
(B)	<i>Post-bankruptcy flag households</i>	-0.0450	---	---
	(11 to 15 years after filing) (n = 342)	(0.0381)	-0.1212 (0.2572)	0.2709*** (0.0573)

*Notes:* Robust standard errors are presented in parentheses. Both specification (1) and (2) include age, age squared, the change in the number of adults, the change in the number of children, year dummy variables, and a constant. All data use the PSID (1985-1996). (\*\*\*), (\*\*), and (\*) represent significance at the 1, 5 and 10 percentiles respectively. The dependent variable equals the log change in food expenditures. The predicted change in incomes ( $\Delta\hat{y}^+$  and  $\Delta\hat{y}^-$ ) are predicted using the specification in Appendix Table A1.

**Table 5: Probability of being turned down for a loan – PSID and SCF**

	<i>PSID</i>	<i>SCF</i>	<i>SCF</i>
	<i>Mortgage loans</i>	<i>Mortgage loans</i>	<i>All loans</i>
	<i>Coefficient</i> <i>(std. error)</i>	<i>Coefficient</i> <i>(std. error)</i>	<i>Coefficient</i> <i>(std. error)</i>
Filed in last five years	0.3334* (0.1997)	0.4203*** (0.1262)	0.9738*** (0.0917)
Filed six to ten years ago	0.5857* (0.3125)	0.4854*** (0.1629)	1.0504*** (0.1341)
Filed eleven to fifteen years ago	0.1286 (0.4033)	0.5337*** (0.1534)	0.7795*** (0.1160)
Income	-9.37e-07 (1.18e-06)	-5.06e-08 (1.48e-07)	-9.38e-07*** (3.59e-07)
Net worth	-2.59e-07 (2.94e-07)	-1.79e-08 (1.88e-08)	-4.63e-08* (2.69e-08)
High school dropout	-0.2941* (0.1759)	0.0451 (0.1099)	0.2840*** (0.0635)
Graduated high school	-0.0719 (0.1759)	0.0773 (0.0804)	0.0923* (0.0494)
Some college	0.0969 (0.1308)	0.1569* (0.0908)	0.2712*** (0.0542)
Age	0.0118 (0.0333)	0.0275* (0.0163)	-0.0109 (0.0081)
Age squared	-0.0007 (0.0004)	-0.0004** (0.0002)	-0.0002** (0.0001)
Married	0.0463 (0.1204)	0.0677 (0.0770)	-0.2374*** (0.0459)
Black	0.1684 (0.1344)	0.0787 (0.0966)	0.4038*** (0.0566)
Family size	-0.0747** (0.0395)	0.0726*** (0.0224)	0.0577*** (0.0149)
Whether employed	0.1663 (0.2052)	-0.1907** (0.0978)	-0.0736 (0.0567)
Region dummy variables	YES	NO	NO
<i>R-squared</i>	0.1536	0.0593	0.1813
<i>n</i>	6,402	8,679	8,679

*Notes:* For the PSID results, robust standard errors are presented in parentheses. The PSID data is from (1991-1995). The SCF data are from 1998 and 2001.

(\*\*\*), (\*\*), and (\*) represent significance at the 1, 5 and 10 percentiles respectively.

**Appendix Table A1: Predicted change in income ( $\Delta y_{t+1}$ )**

	<i>Coefficient (std. error)</i>
$\Delta y_t$	-0.5394*** (0.0161)
$\Delta y_{t-1}$	-0.2870*** (0.0151)
$\Delta y_{t-2}$	-0.1480*** (0.0111)
$\Delta$ Weeks worked <sub>t+1</sub>	0.0071*** (0.0004)
Age <sub>t+1</sub>	0.0050*** (0.0014)
Age squared <sub>t+1</sub>	-6.4e-05*** (1.3e-06)
$\Delta$ Adults <sub>t+1</sub>	0.1426*** (0.0095)
$\Delta$ Children <sub>t+1</sub>	0.0451*** (0.0106)
Year dummy variables	YES
R-squared	0.2647

*Notes:* Robust standard errors are presented in parentheses. All data use the PSID (1985-1996). (\*\*\*), (\*\*), and (\*) represent significance at the 1, 5 and 10 percentiles respectively. The dependent variable equals the log change in income between t+1 and t (see the data appendix).