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Household Borrowing after Personal Bankruptcy

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JEL Classifications: J22, K35
Key words: Personal bankruptcy, credit constraints, household finance

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Abstract

A large literature has examined factors leading to filing for personal bankruptcy, but little is known about household borrowing after bankruptcy. Using data from the Survey of Consumer Finances, we find that relative to comparable nonfilers, bankruptcy filers generally have more limited access to unsecured credit but borrow more secured debt post bankruptcy, and they pay higher interest rates on all types of debt. We also find that credit access and borrowing costs improve as more time passed since filing. However, filers experience renewed debt payment difficulties and accumulate less wealth, even many years after filing, suggesting that for many bankrupt households, debt discharges fail to generate an effective fresh start as intended by the law. Our estimate also provides empirical guidance for calibrating the equilibrium models of household credit.

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1 Introduction

A cornerstone of the U.S. consumer credit markets is the personal bankruptcy law, which aims to provide a "fresh start" to distressed debtors through debt discharge.[1] Amid the fast growth of consumer credit in the past two decades, the number of households that have sought bankruptcy protection has also increased dramatically in the United States, with the annual rate of personal bankruptcy filings rising from 3.6 filings per thousand households in 1980 to nearly 14 in 2004. Such a rapid rise has motivated an extensive literature searching for the causes of personal bankruptcy filing. Most of the existing literature, however, focuses squarely on the prepetition conditions and financial market evolutions and pays little attention to household financial conditions post bankruptcy. This is somewhat surprising because what happens to postbankruptcy borrowing should affect the filing decision in the first place. In addition, studying postbankruptcy financial well being is critical to evaluating the effectiveness of the law. Moreover, with little empirical evidence documented as guidance, the existing dynamic equilibrium models with bankruptcy features may not have been realistically calibrated.

In this paper, we seek to address this void by providing a comprehensive analysis on household borrowing after personal bankruptcy filing. Using data from the Survey of Consumer Finances (SCF), we examine the differences in the use of credit between those households who have ever filed for bankruptcy and those who have never filed, hereafter "filers" and "nonfilers", respectively. In addition, we study how the effects of bankruptcy filing vary with time passed since the last filing, hereafter "time since filing". Specifically, for each of the three major debt categories—credit card debt, first lien home mortgages, and vehicle loans—we try to answer the following questions: Is it less likely for filers to take on such debt than comparable nonfilers? Conditional on having the access, do filers borrow less or pay a

[1] The best-known elaboration of the "fresh start" idea is by the U.S. Supreme Court in its influential ruling in *Local Loan Co. v. Hunt, 292 U.S. 234 (1934)*, which stated that the bankruptcy discharge "gives to the honest but unfortunate debtor...a new opportunity in life and a clear field for future effort, unhampered by the pressure and discouragement of pre-existing debt."

higher interest rate? Are filers more likely to experience renewed debt payment difficulties? How do these effects change with the staleness and the removal of a bankruptcy record from credit reports?

We find that without controlling for time since filing, filers generally have less access to unsecured revolving credit than comparable nonfilers but borrow more on mortgages and vehicle loans. Relative to comparable nonfilers, an average filer is about 50 percent less likely to obtain a credit card and, conditional on having a card, has a credit limit that is almost $8000 lower. In contrast, filers have a similar likelihood of obtaining a mortgage, and their mortgages have only slightly higher loan-to-value ratios at the origination. Filers are also 28 percent more likely to obtain a vehicle loan, but they have similar size of loans relative to their income. Finally, filers generally pay significantly higher interest rates on all three types of loans than comparable nonfilers.

The effects of bankruptcy filing also depend on whether the bankruptcy filing record appears on credit reports. The Fair Credit Reporting Act requires that credit bureaus remove a bankruptcy record from credit reports ten years after a filing. We find that, for households who filed for bankruptcy fewer than nine years previously—those whose filing records remain on their credit reports—the effects of filing on credit card debt and vehicle loans are similar to the general results stated above, but the effects on first lien mortgages vary considerably with time since filing. Relative to comparable nonfilers, households who filed more than nine years earlier—those whose filing records no longer appear on their credit reports—have similar or higher likelihood of having each of the three types of loans, carry higher balances or leverages, but do not necessarily pay higher interest rates.

Despite the reduced form nature of our estimations, we attempt to infer through which channel, demand or supply of credit, the bankruptcy filing affects postbankruptcy borrowing. We make such inference based on the joint predictions of standard price theory on the changes in both equilibrium debt quantity and interest rate. This approach allows us to make the following claims: First, households who filed for bankruptcy fewer than nine years earlier face

a lower supply of credit card credit than comparable nonfilers, but they have stronger demand for vehicle loans. Second, relative to comparable nonfilers, households who filed more than nine years earlier have stronger demand for all three types of credit. This stronger demand is possibly due to the fact that filers may have deliberately deferred their loan requests until the tenth anniversary, because after that they can get better deals when their credit scores artificially improved with the removal of the bankruptcy flag.

Our analysis also reveals that filers continued to experience debt payment difficulties and accumulate less wealth post bankruptcy. Relative to comparable nonfilers, filers are generally about 30 percent more likely to have fallen behind on their debt payment schedules, and they have substantially lower net worth, even many years after their last filings. The persistent financial distress and low wealth accumulation among filers suggest that, for many bankrupt households, debt discharge fails to generate an effective fresh start as intended by the law.

This paper contributes to three strands of literature. First, our comprehensive analysis extends significantly the limited studies on household borrowing and financial well being post bankruptcy. Previous studies suggest that households may still be able to borrow, in part because advances informational technology and financial innovations allow lenders to better screen, monitor, and price loans. Our analysis goes beyond these studies by providing quantitative evidence on both quantity and prices of postbankruptcy borrowing in major consumer debt categories. Second, our findings provide a benchmark for the calibration of theoretical models of personal bankruptcy and credit constraints. In recent years, a growing literature has used dynamic equilibrium models to study various positive and normative aspects of personal bankruptcy. With little empirical guidance from the existing literature, these theoretical models impose various assumptions about postbankruptcy credit access, instead of calibrating the models directly using data on actual credit use. Third, our paper contributes to the growing literature on the impact of filing for personal bankruptcy on consumer behavior. Existing empirical studies have looked into the effects of filings for personal bankruptcy on homeownership, consumption, and labor supply. Our paper complements

these studies and provides further evidence about the costs of filing for personal bankruptcy.

The rest of the paper is organized as follows. Section 2 reviews the relevant legislation, theory, and literature; Section 3 describes our data and discusses methodological issues; Sections 4 and 5 present, respectively, descriptive and regression results on postbankruptcy borrowing; Section 6 examines debt delinquency and wealth accumulation after bankruptcy filing; and Section 7 concludes and discusses directions for future research.

2 Background: Legislation, Theory, and Literature

In this section, we briefly review the areas of legislation relevant to household postbankruptcy borrowing, theoretical hypotheses about the effects of bankruptcy, our strategy to infer demand and supply effects, and the related literature.

2.1 Relevant Legislation

Household postbankruptcy borrowing is affected by two areas of legislation: the Bankruptcy Act which governs the personal bankruptcy filing, and the Fair Credit Reporting Act (FCRA) which regulates how a filing is reported by credit bureaus.[2]

The key aspect of the Bankruptcy Act is the provision of debt discharge. A debtor can file under Chapter 7 of the Bankruptcy Act to obtain a discharge of unsecured debts (with some debts, such as student loans and unpaid tax liabilities, not dischargeable). Alternatively, the debtor can file under Chapter 13, where he obtains a debt discharge after paying off a portion of his debt through a 3-to-5 year debt repayment plan.[3] In this study we are unable to distinguish the different effects of the two Chapters because our data do not have any

[2]Because we use the SCF waves from 1998 to 2004, the applicable bankruptcy law is the Bankruptcy Reform Act of 1994 (Public Law 103-394, October 22, 1994). The latest amendment, which became effective on October 17, 2005, was the Bankruptcy Abuse Prevention and Consumer Protection Act (BAPCA) of 2005. The Fair Credit Reporting Act (FCRA) is a federal law (codified at 15 U.S.C. 1681 et seq.) that regulates the collection, dissemination, and use of consumer credit information. Enforced by the US Federal Trade Commission, it was originally passed in 1970 and the latest amendment was in 2008.

[3]For a detailed description of the different options under the current Bankruptcy Act, see *Bankruptcy Basics* available at http://www.uscourts.gov/bankruptcycourts/bankruptcybasics.html.

information on the Chapter choice. Pooling the two chapters, however, is standard in the literature, mostly because of the small number of Chapter 13 filings. Historically, before the 2005 amendment of the Bankruptcy Act, Chapter 7 filings account for about two-thirds of total initial personal bankruptcy filings, and many of the Chapter 13 filings eventually convert to Chapter 7. In addition, both chapters share the key feature of the U.S. personal bankruptcy law, that is, debt discharge.

The second aspect of the Bankruptcy Act that can affect postbankruptcy borrowing is that it restricts repeated discharges. Specifically, the law prohibits a debtor from obtaining a bankruptcy discharge until six years after being discharged from a previous bankruptcy filing.[4] Thus, a filer differs from nonfilers in his delayed access to bankruptcy discharge and from other filers in the length of the delay. As argued below, this temporary removal of the option of obtaining bankruptcy discharges may affect both the decision of filing in the first place and the postbankruptcy credit demand and supply.

The FCRA is also important to studying postbankruptcy borrowing because it regulates how a bankruptcy filing is reported by credit bureaus. The most important rule is the time limit on reporting a bankruptcy filing and the associated defaults leading to the filing. Specifically, the FCRA requires that a bankruptcy filing can only stay on credit reports furnished by the credit bureaus for at most 10 years from the date of relief or the date of adjudication—the date when the court decrees that the filer is bankrupt (FCRA §605 (a)(1)). In addition, all other non-bankruptcy defaults can only stay on a credit report for seven years (FCRA §605 (a)(5)).[5]

The potential channels through which a bankruptcy filing and the above regulations can

[4]This limit has been extended to eight years in the Bankruptcy Abuse Prevention and Consumer Protection Act of 2005.

[5]The exact texts are the following: "§605 (a) Information excluded from consumer reports. (1) Cases under title 11 [United States Code] or under the Bankruptcy Act that, from the date of entry of the order for relief or the date of adjudication, as the case may be, antedate the report by more than 10 years"; and "(5) Any other adverse item of information, other than records of convictions of crimes which antedates the report by more than seven years." The FCRA has no rule on the minimum period of time that credit bureaus have to report a bankruptcy filing. Indeed, in practice, it is common that credit bureaus remove a Chapter 13 bankruptcy record from a credit report after only seven years. Also, the Act has no time restrictions on using the bankruptcy record that is maintained in the creditor's proprietary database.

affect household postbankruptcy borrowing are discussed below.

2.2 Channels through Which Bankruptcy Affects Borrowing

In theory, a bankruptcy filing may affect both the demand and supply of postbankruptcy credit through various channels. First, a bankruptcy filing alters the household balance sheet, which in turn may affect future borrowing. With the existing unsecured debts discharged, i.e., the fresh start, the household balance sheet becomes less leveraged. All else equal, a stronger balance sheet may boost both the demand for and the supply of credit.

Second, a bankruptcy filing may result in changes in the preferences and financial sophistication of households. A debtor may learn through the experience how surprisingly easy or difficult it is to go through the legal process of filing for bankruptcy. The realized extent of social stigma attached to bankruptcy can also be unexpectedly high or low, which may result in changes in the household's attitudes toward the use of credit. Also, the bankruptcy process may educate households in personal finance management. Indeed, such educational effect is arguably one of the primary goals of the U.S. bankruptcy law.[6] In addition, compared with nonfilers, a recent filer may have a stronger need to re-establish a good credit history. Thus, all else equal, filers might have stronger demand for access to credit, but do not necessarily want to have a larger loan. However, given the heterogeneity of the bankruptcy process, which is often emotional and comes with many other significant family events (see, for example, Domowitz and Sartain (1999); Sullivan, Warren and Westbrook (2000); Fay, Hurst and White (2002); Warren and Tyagi (2003)), it is essentially impossible to make a general prediction on how household preferences and financial sophistication, and in turn overall demand for credit, change with a bankruptcy filing.

Third, from the point of view of creditors, the bankruptcy filing can be an important

[6]Congress (1973) suggests that the bankruptcy process should serve as consumer financial education to achieve the ultimate goal of a fresh start. Howard (1987) identifies three different ways that the bankruptcy system could provide a fresh start to consumer debtors: (1) consumer financial education of the debtor, (2) emotional and psychological relief from financial failure, and (3) renewed debtor participation in the open credit economy. See, also Jackson (1998) for alternative interpretations of bankruptcy fresh start.

signal of a household's private information, including preferences, self-control abilities or financial situations, that was previously unobservable to creditors. A bankruptcy filing may suggest that filers possess unobservable characteristics that are associated with high credit risk. As a result, all else equal, creditors may want to reduce the supply of credit to the filers and to ask for higher interest rate to compensate for the higher expected credit risk.

In addition, time since filing may also matter to both demand and supply of post-bankruptcy credit. As mentioned above, after the tenth anniversary of a bankruptcy, credit bureaus have to remove the filing record from credit reports. In addition, all derogatory information on credit events leading to the bankruptcy filing disappears by seven years after the bankruptcy. The removal of these records leads to increases in credit scores, resulting in increases in the supply of credit right after the tenth anniversary or perhaps even earlier (Musto, 2004). Demand for credit may also increase if the debtor has waited strategically until the bankruptcy or default flag is removed.

The timing of the restrictions on repeated discharges may also influence the demand and supply of credit. Such restrictions disappeared six years after bankruptcy. A forward-looking debtor would weigh the option value and benefits of immediate debt discharge as he decides whether to file for bankruptcy. Conditional on having filed, the debtor may want to delay his use of credit until approaching the end of the six-year restriction. Conversely, during the delay period, impaired creditors may be able to garnish debtor's wages and seize assets. This lower collection cost and expected higher recovery boost the debtor's creditworthiness. Thus, as the refiling restriction is closer to being lifted, one might expect to see increasing demand for and decreasing supply of credit.

Finally, bankruptcy records aside, household financial situations may change after bankruptcy as the adverse conditions that led to the filing, such as job loss, divorce, medical problems, may have improved with time. As a result, the demand for credit could increase or decrease depending on the nature of the shocks.

The primary goal of our study is to estimate the net impact of all these possible forces

on postbankruptcy borrowing. But we also go one step further to infer how the demand and supply of credit change in response to a bankruptcy filing using an approach similar to Gropp, Scholz and White (1997). Specifically, we do so by jointly examining the impacts of bankruptcy filing on both equilibrium interest rate (R) and debt quantity (Q, measured by the likelihood of having a loan and the amount of loan conditional on having a loan).

To illustrate this, consider a scenario in which we find that filers borrow larger quantities at higher interest rates than comparable nonfilers, denoted by $(R \uparrow, Q \uparrow)$. Then we can claim that filers must have a higher demand for credit than comparable nonfilers. Suppose otherwise, that filers have a weaker demand. Then the standard price theory suggests that filers should borrow less if supply shifts down ($Q \downarrow$) or pay lower interest rate ($R \downarrow$) if supply shifts up. Each of these two outcomes would contradict with the observed quantity and interest rate. Similarly, the combinations of $(R \uparrow, Q \downarrow)$, $(R \downarrow, Q \uparrow)$, and $(R \downarrow, Q \downarrow)$ suggest that, respectively, the postbankruptcy supply must shift down, the supply must shift up, and the demand must shift down.

2.3 Related Literature

There is a small literature on postbankruptcy borrowing. Using data on credit reports from a credit bureau, Musto (2004) finds that the removal of the bankruptcy flag at the tenth anniversary of filing leads to significant increases in the borrower's credit scores as well as the number and credit limit of bank cards. In the longer run, the removal of the filing record leads to lower scores and more delinquencies. However, the lack of information in the credit bureau data on household income, assets, and demographic characteristics limits the scope of his analysis. Using data from the 2004 wave of the National Longitudinal Survey of Youth (NLSY), Keys (2008) documents that filers are more likely to be declined credit or discouraged to apply for credit. The drawback of the NLSY data is that they are limited to a cohort of consumers recently in their 40s.

A few studies look into postbankruptcy borrowing using data obtained from either post-

bankruptcy surveys or court dockets. In general, these studies find widespread use of credit post bankruptcy but that many filers continued to experience financial difficulties after their debt discharges (Stanley and Girth, 1971; Staten, 1993; Braucher, 1993; Warren and Tyagi, 2003; Porter and Thorne, 2006; Porter, 2008). Based on these results, some question the effectiveness of personal bankruptcy in producing fresh start (Porter and Thorne, 2006; Zagorsky and Lupica, 2008). However, these studies are mostly descriptive and do not have a well-controlled nonfiler group.

This paper is also related to a much larger literature on what prepetition conditions contribute to a personal bankruptcy filing. The general findings are that immediate financial benefits from debt discharge, adverse events (such as job loss, medical expenses, and divorce), and falling social stigma are all positively associated with the likelihood of filing for bankruptcy (Domowitz and Sartain, 1999; Lin and White, 2001; Fay et al., 2002; Gross and Souleles, 2002; Warren and Tyagi, 2003; Athreya, 2004).[7] However, these conventional factors appear to be able to explain only a fraction of the enormous increase in personal bankruptcy filing rates in the United States since 1980s (White, 1998; Sullivan et al., 2000; Fay et al., 2002).[8] Recent studies suggest that, among other factors, the ease of access to credit, both before and after filing for bankruptcy, may have played a more important role (Livshits, MacGee and Tertile, 2007*a*; White, 2007). Innovations in consumer credit markets may have led to easier access to credit, especially unsecured credit, which may, in turn, have led to an unsustainable degree of leverage for some households, increasing the immediate financial benefits from bankruptcy discharge. In addition, rapid technological progress in the financial industry made it less costly to screen and manage distressed debtors, resulting in an increased supply of credit to segments of the markets that used to be out of reach for conventional lenders (Dick and Lehnert, 2007; White, 2007). The greater availability of credit to those who filed for bankruptcy may have also reduced the deterring

[7]Other factors may also play a role in the bankruptcy filing decision, such as behavior bias (Laibson, Repetto and Tobacman, 2003) and availability of other public insurance (Athreya and Simpson, 2006).

[8]See, e.g., Athreya (2005) for a survey of this literature.

effects of having a bankruptcy flag on credit report.

Our study also complements the rapidly growing literature that uses equilibrium models to study issues related to personal bankruptcy, such as the factors driving the sharp rise in the bankruptcy filing rates and the welfare implications of bankruptcy law reforms (e.g., Livshits, MacGee and Tertile (2007*b*); Chatterjee, Corbae, Nakajima and Rios-Rull (2007); and Li and Sarte (2006)). These theoretical models differ from each other in their assumptions on postbankruptcy credit access, with default punishment ranging from no penalty to complete financial autarky. Our estimates provide an empirical basis for calibrating such models in future research.

Finally, this paper is related to a growing literature on the effect of filing for personal bankruptcy on consumer and creditor behaviors. Existing empirical studies have looked into the effects of filing for personal bankruptcy on consumption (Filer and Fisher, 2005; Filer and Fisher, 2007), labor supply (Han and Li, 2007), wealth accumulation (Repetto, 1998), and homeownership (Li and Carroll, 2008; Eraslan, Li and Sarte, 2007; White and Zhu, 2008), as well as the effects of the personal bankruptcy law on the demand and supply of credit (Lin and White, 2001; Fan and White, 2003; Gropp et al., 1997). Our study augments the literature with a comprehensive analysis on the credit consequences of filing for bankruptcy.

3 Data and Methodologies

3.1 Data and Sampling

Our main data source is the Survey of Consumer Finances (SCF), which is widely believed to be the best source of information about household finances in the United States. Sponsored by the Federal Reserve Board, this triennial survey collects detailed information on the balance sheet, income, and demographic characteristics of U.S. households.[9]

[9]The survey oversamples the high end of the wealth distribution in order to obtain more precise estimates of national household wealth, once weighted appropriately. For a more detailed description of the SCF, see the survey's website at http://www.federalreserve.gov/PUBS/oss/oss2/scfindex.html

Starting from the 1998 wave, the SCF asks respondents, "have you (or your spouse/partner) ever filed for bankruptcy?" If the answer is "Yes", the survey will continue to ask, "when was the most recent time?" As noted earlier, the SCF lacks information on the chapter choice in a bankruptcy filing.

Our study uses the data from the 1998, 2001, and 2004 waves of the SCF. We restrict our sample to the households whose heads have not reached typical retirement age. Specifically, we include, for credit card debt, only those between 25 and 65 years old in the survey year and, for vehicle loans and mortgages, those between 25 and 65 years old at the time when the loans were originated. We also restrict our sample to those with a normal household income greater than $3000 in 2004 dollars (removing about the first percentile of the income distribution).

Our empirical analysis focuses on three major types of household debt: credit card debt, first-lien home mortgages, and vehicle loans. These three types of debt account for over 80 percent of total household debt.[10] Because credit card debt is unsecured and mortgages and vehicle loans are secured, the choice of these debt categories also reflects our intuitive expectations that the effect of bankruptcy filing may depend on the security of the loans.

Finally, we take the following measures to avoid the complications caused by mulitiple accounts within each type of debt. For credit card debt, credit limits and card balances are the totals on all cards, but the interest rate is the rate on the card with the highest balance;[11] for first-lien mortgages, we restrict our analysis to the mortgage on the primary residence; and for vehicle loans, we restrict our analysis to the loan on the first vehicle purchased after bankruptcy filing.

[10]The SCF also contains information on various other types of debt, such as home equity loans and home equity lines of credit. We do not present our results on them mainly because only a few bankrupt households have acquired them post bankruptcy.

[11]The SCF collects credit card interest rate information for only the card with the highest balance.

3.2 Empirical Models

We use various regression techniques to analyze the effects of both bankruptcy filing and time since filing on postbankruptcy credit access, debt amount, and borrowing costs. Specifically, for credit card debt, access is measured by the likelihood of having a credit card and the ratio of the credit limit to income, and debt amount by the ratio of card balance to household income; for the first-lien mortgage, access is measured by the likelihood of having a mortgage, and debt amount by loan-to-value ratio (LTV) at origination; for car loans, access is measured by the likelihood of having a vehicle loan, and debt amount by loan-to-income ratio (LTI) at origination. Finally, to take into account broad interest rate levels in different origination years, we measure borrowing costs using the spread of the interest rate on each type of debt over rates on comparable maturity Treasury securities.

We use Logit regressions to estimate the the likelihood of having a certain type of debt. To be precise, for each debt category, we define for household i at time t an indicator variable L_{it} so that it equals to 1 if the household has such debt and 0 otherwise. We assume that there exists a latent variable y_{it} such that

$$L_{it} = 1, \text{ if } y_{it} \geq 0; \text{ 0 otherwise,}$$

where

$$y_{it} = \beta B_{it} + \alpha Z_{it} + \epsilon_{it}. \tag{1}$$

The variable B_{it} is a vector of dummy variables indicating, as of t, how many years have elapsed after the most recent bankruptcy filing, and Z_{it} is a vector of control variables including proxies for household preference, and demographic and income characteristics.

We use simple ordinary least squares (OLS) regressions for dependent variables with continuous values, including ratios of credit card limit to income, mortgage LTV, vehicle loan LTI and interest rate spreads, with the same set of independent variables as in the Logit regression (1). We use Tobit regressions for censored dependent variables, including

credit card balance to income and to credit limit ratios.

3.3 Measurement Issues

We now address two measurement issues related to special features of the SCF data. The first one is that in the publicly available data of the SCF, the exact time of the last filing is masked: the reported number of years passed since the last filing is rounded up to the nearest odd number. To address this issue, we define alternative sets of dummy variables to indicate the range intervals of time since filing. Using dummy variables, instead of a continuous variable, has two advantages. First, it allows us to address the possible nonlinear effect of bankruptcy history. Second, it allows us to use cut-off points that take into account the time restrictions in both the Bankruptcy Act and the FCRA. As noted in Section 2, a filer cannot refile for a bankruptcy (Chapter 7) until after the sixth anniversary of the last bankruptcy, and the bankruptcy record is removed from credit reports after the tenth anniversary. Our discussions there suggest that both the demand and supply of credit may change at these critical points in times.

Specifically, we first consider a coarse definition with a dummy variable indicating whether the household has ever filed for bankruptcy (equal to 1 if filed, 0 otherwise). A finer definition is a set of dummy variables indicating that the bankruptcy was filed one year earlier, two-five years earlier, six-nine years earlier, and more than nine years earlier. We also consider other definitions in between these two, with the dummy variables indicating that the bankruptcy was filed one-five years earlier or more than five years earlier or that the bankruptcy was filed one-nine years earlier or more than nine years earlier. The key results with these alternatives, not shown, are consistent with those reported here.[12]

The second measurement issue is timing mismatch between survey time and the time of loan originations. To estimate equation (1) and the related OLS and Tobit regressions, the

[12]These results are available upon request. Estimations with dummy variables for each point of reported time, ranging from 1 to over 11, have lower precisions as the numbers of observations for some categories are too small.

variables on both sides of the equations ought to be valued at the same time. Because the SCF is cross-sectional, household characteristics and financial conditions at the time of a loan application are not directly observable (except for the small number of loans originated shortly before the survey). In order to make use of the full data, we take steps to address this timing mismatch issue.

For credit card debt, the SCF has no information on when a card was acquired.[13] Therefore, for relevant regressions, we use the values at the time of survey for all variables. In particular, to make it comparable across different survey years, we measure borrowing costs by the spread of the credit card rate over the rate on two-year Treasury securities in the survey year.

For mortgages and vehicle loans, the SCF asks the respondents "when the loan was taken?" Combining this information and time since filing at survey, we identify and include only loans orginated after the last bankruptcy filing and infer time since filing at the origination of these loans. In measuring debt quantity and borrowing costs, we treat mortgages and vehicle loans differently. For mortgages, the SCF asks about both the amount of mortgage acquired and the house price at the origination. Thus, we can calculate LTV at the origination. We measure borrowing costs by the spread of mortgage rate over the the rate on ten-year Treasury securities in the year of the origination. Also, we keep only mortgages that were used for purchases and originated within five years prior to the survey.

For vehicle loans, the SCF asks for the original amount of the loan but not the original vehicle price. Because the SCF does not ask for income information retrospectively, we use "normal income" reported in the survey year to calculate LTI at the origination. We mitigate the approximation error by restricting the analysis to the loans taken within five years prior to the survey.[14] We measure borrowing costs by the spread of vehicle loan rate over the rate on five-year Treasury securities in the year of purchase.

[13] Importantly, all credit cards possessed before filing for bankruptcy became void upon the filing. So for filers, all reported credit cards were obtained post bankruptcy.

[14] "Normal income" does not include the transitory income fluctuations in the survey year and is supposedly more stable than total income over time. See the Appendix for details on the SCF question on normal income.

Finally, for all regressions, Z_{it} only includes household head age, race, education attainment, family size, marital status, risk aversion, and credit attitude. Among these variables, age and race can be accurately inferred, but others are approximated, using their reported values at the time of survey. In all regressions, we also include year dummies to control for macroeconomic effects.

4 Descriptive Statistics

In this section, we present descriptive statistics on bankruptcy filing status, household credit access, debt amount, borrowing costs, overall borrowing, and financial health post bankruptcy. Note that all summary statistics except the number of observations are computed using the weights provided by the SCF.

4.1 Bankruptcy Filing Status

Table 1 summarizes bankruptcy filing status reported in the SCF. Overall, the occurrence of bankruptcy filings in the SCF is similar to the national bankruptcy statistics. First, about 1.4 percent of households filed for bankruptcy in the year just prior to being surveyed. This is consistent with the annual rate of personal bankruptcy filing based on the national statistics over the same period. Second, the fraction of households who have *ever* filed for bankruptcy rose from 8.5 percent in 1998 to 11 percent in 2004, also consistent with the figures computed from various credit bureau data.

4.2 Demographics, Income, and Preferences

Table 2 summarizes household characteristics, including demographics, income, and preferences. The main point here is that, as a group, filers have lower earning power but are generally more willing to borrow than nonfilers. Specifically, filers have lower normal income and are less likely to have college degrees, be married or self-employed, more likely to be

nonwhite, more likely to have overspent in the survey year, and in general are more willing to borrow. Perhaps paradoxically, filers are also more likely to have high risk aversion (see Appendix for the definitions of "overspending", "credit attitude", and "risk aversion"). However, the two groups are similar in average household head age and family size.

4.3 Credit Card Debt, Mortgages, and Vehicle Loans

Statistics on credit card debt are shown in panel A of Table 3. As a group, filers have fewer credit cards than nonfilers. About 60 percent of filers have credit cards, compared with 76 percent of nonfilers. Conditional on having a credit card, filers also have significantly lower credit limits, by $12,000. However, filers borrow more conditional on having a card. They are more likely to have an unpaid balance; and, conditional on having unpaid balances, they have moderately higher balances both in dollar amount and relative to normal income or to credit limit. Moreover, filers pay average rate spreads of 11.6 percent on their balances, about 1.7 percentage points higher than that paid by nonfilers.

As shown in panel B, filers and nonfilers have a similar likelihood of having acquired mortgages; but, conditional on having acquired a mortgage, filers have about an 8 percentage points higher LTV and pay mortgage rate spreads that are half a percentage point higher. As shown in panel C, 48 percent of filers have acquired a vehicle loan post bankruptcy, a rate significantly higher than that of nonfilers, 38 percent. Conditional on having acquired a vehicle loan, filers borrow similar amount relative to their incomes. However, filers pay an average rate spread of 6.9 percent on their car loans, which is notably higher than the spread by nonfilers, only 4.5 percent.

4.4 Overall Borrowing and Financial Health

In panel D of Table 3, we present summary statistics on overall household borrowing and financial health. Overall, filers appear to be more credit constrained than nonfilers. About 50 percent of filers, more than double that of nonfilers, report that they have been either

rejected on at least one loan application or discouraged from applying for a loan.

Despite their higher likelihood of being credit constrained, filers are more likely to have some debt and have a much more leveraged balance sheet, as indicated by higher debt-to-asset ratio, than nonfilers.[15] In addition, filers are far more likely to be or have been behind in their debt payments and have a lower net worth than nonfilers.

5 Regression Results on Postbankruptcy Borrowing

Filers differ from nonfilers not just in their bankruptcy histories but also in many other dimensions, including their preferences, demographic, and financial conditions. To isolate the effects of bankruptcy filing on household borrowing, we use a regression approach to control for the observable differences in these factors. This section reports these regression results. Note that our discussions here focus on the coefficients on bankruptcy filing status. Estimated coefficients on other control variables—those discussed in Section 3—are available upon request. Also, the reported standard errors are estimated using the procedure provided by the SCF to correct the multiple imputations bias.[16]

5.1 Credit Card Debt

Table 4 shows regression results for credit card debt. Columns (1) and (2) are based on Logit regressions of whether or not households have a credit card. Conditional on having a credit card, Columns (3)-(4) are based on OLS regressions of credit limit to income ratio, Columns (5)-(8) are based on Tobit regressions of card balance to income and to credit limit ratios, censored at zero balance, and Columns (9)-(10) are based on OLS regressions of rate spreads conditional on having a positive balance. Several points are worth noting. First, bankruptcy filing has a negative effect on the probability of having unsecured credit; however,

[15]There is no strong evidence that filers are more persistent in pursuing credit. Among those declined borrowers, about two-thirds apply again regardless whether they ever filed for personal bankruptcy.

[16]For a detailed description of this procedure, see the SCF codebook available at http://www.federalreserve.gov/pubs/oss/oss2/2004/scf2004home.html.

the negative effects decrease with time since filing and essentially disappear for those who filed more than nine years earlier. Specifically, as shown in Column (1), the odds ratio estimates suggest that the likelihood of a filer obtaining a new credit card, unconditional on time since filing, is about half of that of a nonfiler with comparable characteristics. (The unconditional likelihood of having a credit card is 76 percent for nonfilers. See Table 3.) In addition, as shown in Column (2), the likelihood of a household who filed a year earlier having a new credit card is only about 14 percent of the likelihood of a comparable nonfiler. The odds ratio increases to 49 percent for those who filed two to five years earlier, 66 percent for those who filed six to nine years earlier, and becomes statistically indifferent if the filing was over nine years earlier.

Second, conditional on having a card, bankruptcy filing also has a negative effect on the credit limit, and the effect is largely constant over time except when time since filing is over nine years. As shown in Column (3), unconditional on time since filing, the credit limit-to-income ratio of a filer is 14 percentage points lower than that of a comparable nonfiler. This point estimate implies that conditional on having a card, the credit limit of an average filer (with normal income $53 thousand, Table 2) is almost $8000 lower than that of a comparable nonfiler. Noticeably, while the credit limit-to-income ratio of those who filed fewer than nine years earlier is all about 22 percentage points lower than that of a comparable nonfiler, the ratio of those who filed more than nine years earlier is not statistically different from that of a comparable nonfiler (Column 4).

Third, conditional on having a card, filers in general have moderately higher debt balance relative to their normal income, though the differences are not statistically significant. Moreover, filers have higher utilization rates than their comparable nonfilers.[17] As shown in Column (5), unconditional on time since filing, the point estimate suggests the credit card balance to income ratio of filers as a whole is about 2.5 percentage points higher than that

[17]We also find that conditional on having a credit card, the likelihood of carrying credit card debt among filers is strikingly higher than nonfilers. On average, filers are almost three times more likely to carry credit card debt than comparable nonfilers, and the margin is the highest for those who filed most recently.

of comparable nonfilers, though the margin is not statistically significant. Controlling for time since filing, we find that those who filed more than nine years earlier have a significantly higher balance-to-income ratio than comparable nonfilers (Column 6). Furthermore, as shown in Column (7), the utilization rate among filers, unconditional on time since filing, is 22 percentage points higher than that of comparable nonfilers. In addition, the coefficients in Column (8) are all statistically significant and positive, suggesting that regardless of time since filing, filers tend to use more of their credit limits.

Fourth, filers, except those who filed more than nine years earlier, pay notably higher rates on their credit card debt than comparable nonfilers. As shown in Column (9), unconditional on time since filing, the rate spreads that filers pay on their credit card debt balance are 1.20 percentage points, or about 12 percent, higher than those paid by comparable nonfilers. (The average rate spread for nonfiler is about 9.9 percent. See Table 3.) Such premium is only applied to those filers whose bankruptcy records remain on their credit reports. As shown in Column (10), while those who filed fewer than nine years earlier pay close to 2 percentage points higher than comparable nonfilers, those who filed over nine years earlier pay a rate that is statistically indifferent from that paid by comparable nonfilers.

In short, households who filed for bankruptcy fewer than nine years earlier appear to have a significantly lower likelihood of having a new credit card and smaller credit limit relative to normal income, but they tend to use their credit more and pay significantly higher rate spreads. However, households who filed more than nine years earlier are not statistically different from comparable nonfilers, except that they tend to carry higher balance relative to both normal income and credit limit.[18]

[18]The results are consistent with Musto (2004): because bankruptcy filing record was removed from credit report at the tenth year anniversary, filers saw a boost in their credit scores and borrowed more than what they would have if the record were not removed.

5.2 First-Lien Mortgages

Table 5 shows regression results for first-lien mortgages. Columns (1) and (2) are based on Logit regressions of whether households obtained a first-lien mortgage in a given year after filing for bankruptcy, Columns (3)-(4) are based on OLS regressions of LTV and Columns (5)-(6) are based on regressions of rate spreads, conditional on having obtained a mortgage. Several points are worth noting. First, all else equal, the effect of bankruptcy history on the likelihood of obtaining a mortgages is negative for recent filers, insignificant for those who filed several years earlier, but positive for those who filed more than nine years earlier. As shown in Column (2), the coefficients on time since filing dummies change from negative and statistically significant for filed one year earlier, to statistically insignificant for filed two to nine years earlier, and to positive and statistically significant for filed more than nine years earlier. The odds ratio estimates suggest that those who filed one year earlier are 43 percentage points, or 81 percent, less likely to obtain a mortgage than comparable nonfilers, while those who filed more than nine years earlier are 20 percentage points, or 37 percent, more likely to obtain a mortgage than comparable nonfilers. Because of this nonlinear effect, an estimation without controlling for time since filing would yield no statistically significant effect of bankruptcy filing on obtaining a first-lien mortgage.

Second, conditional on having obtained a mortgage, filers, mostly those who filed six to nine years earlier, have higher LTVs on their mortgages. As shown in Column (3), unconditional on time since filing, filers have statistically significantly higher LTVs on their mortgages than comparable nonfilers do. But the margin is small in magnitude, at only 4 percentage points. (The average LTV for nonfilers is 79 percent. See Table 3.) As shown in Column (4), this effect owes mostly to the significantly higher LTV by those who filed six to nine years earlier.

Third, conditional on having obtained a mortgage, filers pay higher rate spreads on their mortgages. As shown in Column (5), unconditional on time since filing, filers have statistically significantly higher rate spreads on their mortgages than comparable nonfilers

do. And the margin is notable, about 34 basis points, or 25 percent of average rate spreads for nonfilers, which is 1.25 percent. However, as shown in Column (6), this effect owes mostly to the significantly higher rate spreads paid by those who filed two to five years earlier, who paid about 66 basis points, or 50 percent, higher than comparable nonfilers. Those who filed more than nine years earlier also paid 37 basis points more, which is also statistically significantly.[19]

The above results suggest that the effects of bankruptcy filing on obtaining a first-lien mortgage depend on time since filing. It is very difficult for the most recent filers to obtain a mortgage. Those who filed between two and nine years earlier have a similar likelihood as comparable nonfilers of having a mortgage, but they tended to lever more and pay higher borrowing costs. Those who filed more than nine years earlier have a somewhat higher likelihood of having a mortgage than comparable nonfilers but have similar leverage and costs.

5.3 Vehicle Loans

Table 6 shows regression results for vehicle loans. Columns (1) and (2) are based on Logit regressions of whether households obtained a car loan after filing for bankruptcy, and conditional on having obtained a vehicle loan, we run OLS regressions for loan-to-normal income ratios in Columns (3) and (4) and rate spread Columns (5) and (6). The most striking result is that filers are much more likely to have a new vehicle loan than comparable nonfilers. As shown in Columns (1) and (2), whether conditional on time since filing or not, the coefficients on bankruptcy filing status are all positive and almost all statistically significant. The odds ratio estimates suggest that, unconditional on time since filing, filers as a whole are 28 percent more likely to obtain a new vehicle loan than comparable nonfilers. The margin is 37 percent for those who filed a year or less earlier, falls notably to about 8 percent for those who filed two to five years earlier (statistically insignificant), but increases to over 35

[19]The effect is significant in that we reject a one-side test of the null hypothesis of negative effect at the 95 percent of confidence level.

percent for those who filed more than six years earlier.

The strong tendency of having a vehicle loan after filing for bankruptcy may owe to the repossession of vehicles in the bankruptcy process. While vehicles are exempt assets in bankruptcy, filers still have to surrender those with a outstanding lien. Because most households find it hard to do without their vehicles, they would have to buy one if they lost it in bankruptcy. In addition, from the point of the view of creditors, vehicle loans are secured by the vehicle, and thus the loans are safer than unsecured credit card debt.

Conditional on having obtained a new vehicle loan, the amount of loans that filers took out relative to their normal income is similar to that taken out by comparable nonfilers. As shown in Columns (3) and (4), in the regressions of the ratios of vehicle loan to normal income, all coefficients on bankruptcy filing status, whether conditional on time since filing or not, are statistically insignificant and small.[20]

However, filers, especially those who filed fewer than six years earlier, paid significantly higher rate spreads. As shown in Column (5), unconditional on time since filing, the rate spreads that filers paid on their vehicle loans are 1.9 percentage points, or 40 percent, higher than those paid by comparable nonfilers. (The average rate spread for nonfilers is 4.5 percent. See Table 3.) The effects of bankruptcy filing on vehicle loan rate spreads are nonlinear. As shown in Column (6), compared to nonfilers with similar characteristics, those who filed a year earlier, two and five years earlier, and six and nine years earlier paid, respectively, 2.7, 3.4, and 1.2 percentage points more on their vehicle loan rates, and all these differentials are statistically significantly greater than zero.[21] However, the differentials in rate spreads between those who filed nine years earlier and comparable nonfilers are not statistically different from zero and the point estimates are very small.

[20]Because we cannot estimate the vehicle value at the time of purchase, we do not have a measure for leverage. We do find, not shown, that the ratios of vehicle loan to total household assets are significantly higher for filers. However, this may be because filers have unusually low assets after they surrender their non-exempted assets in the bankruptcy process.

[21]That is, we reject a one-side hypothesis test of negative effect at the 95 percent of confidence level.

5.4 Inferences on the Demand and Supply Effects

In Table 7, we summarize our regression results and infer how bankruptcy filing status affects the demand and supply of postbankruptcy credit. Our main points are the following: On the one hand, relative to comparable nonfilers, households who filed for bankruptcy fewer than nine years earlier—those whose filing records remained on their credit reports—clearly faced a lower supply of unsecured debt, as they borrowed less at higher rate spreads; but they had stronger demand for vehicle loans, as they were more likely to have a vehicle loan at higher rate spreads. On the other hand, relative to comparable nonfilers, households who filed more than nine years earlier—those whose filing records no longer appeared on their credit reports—had stronger demand for all three types of credit, as they had similar or higher likelihood of having these types of debt, carried larger balances or higher leverages, but did not necessarily pay higher rate spreads.[22]

As shown in Line 1, without considering the possible nonlinear effects of time since filing, filers generally used a smaller amount of credit card debt than comparable nonfilers, with both lower likelihood of obtaining a credit card and lower credit limit and balance conditional on having a card. In contrast, filers borrowed more through both mortgage and vehicle loans, though, through somewhat different channels. Relative to comparable nonfilers, filers have similar likelihood of obtaining a mortgage but with higher LTVs. In contrast, they are more likely to have obtained a vehicle loan but with a similar amount of loans conditional on having a vehicle loan. Nonetheless, filers paid significantly higher rate spreads on all of the three types of loans than comparable nonfilers.

Based on the approach we lay out in Section 2.2, the combinations of the effects on debt quantity and interest rate suggest that filers faced lower supply of credit card debt post bankruptcy but had a higher demand for mortgage and vehicle loans than comparable nonfilers. The dichotomy between credit card debt and mortgage and vehicle loans may

[22]Consistent with Musto (2004), the expiration of the bankruptcy refiling restrictions at the sixth year anniversary appears to have no discernible effect.

be due to their different lien status and treatments during the bankruptcy process. As we argue earlier, bankruptcy filing causes lower supply of credit as creditors see it as a signal for unobservable factors associated with higher credit risk. This supply channel has a stronger effect on credit card debt because of its unsecured nature. The securities in mortgages and vehicle loans mitigate this supply effect. However, households can lose their houses or vehicles in bankruptcy if there are outstanding lien against them; thus they may have a stronger desire than comparable nonfilers to purchase a new house or vehicle postbankruptcy.

The effects of bankruptcy filing also depend on time since filing. Specifically, for credit card debt, households who filed less than nine years earlier borrowed less at higher rate spreads than comparable nonfilers, indicating lower supply of credit for these filers. However, households who filed more than nine years earlier carried higher balance relative to their normal income but did not necessarily pay higher rates than comparable nonfilers. While in theory this can be caused by either higher supply of or stronger demand for credit, we believe it is the stronger demand that matters more. All else equal, creditors are generally unable to identify these filers from nonfilers once the bankruptcy record is removed from their credit reports. On the other hand, filers may have deliberately deferred their loan applications until the tenth year anniversary of filing after which they should be able to get better deals with their credit scores improved by the removal of the bankruptcy flag.

For mortgage loans, our findings indicate clearly that households who filed more than nine years earlier had stronger demand for credit than comparable nonfilers, as they borrowed more at higher rate spreads. For those who filed fewer than nine years earlier, the effects of bankruptcy filing vary with time since filing in some ambiguous ways.

For vehicle loans, we find that households who filed a year earlier are more likely to borrow to purchase a vehicle at higher rate spreads than comparable nonfilers, indicating clearly stronger demand for car loans. For households who filed between two and five years earlier, the only unambiguous result is that they paid higher rate spreads on their vehicle loans than comparable nonfilers. In theory, this can be caused by either lower supply of or

higher demand for vehicle loans. For households who filed six and nine years earlier, the demand for vehicle loans is higher, as they borrowed more at higher rate spreads. Finally, households who filed more than nine years earlier were more likely to obtain a vehicle loan but did not necessarily pay higher rates than comparable nonfilers. The higher likelihood of obtaining a vehicle loan is bound to be due to stronger demand for credit instead of higher supply. This is because from the creditor's point of view, filers with their bankruptcy records removed are observationally undistinguishable from nonfilers.

6 Postbankruptcy Financial Health

One of the primary goals of bankruptcy discharge is to "relieve the honest debtor from the weight of oppressive indebtedness and permit him to start afresh" (U.S. Supreme Court, *Williams v. United States Fid. & Guar. Co., 236 U.S. 549 (1915)*). Bankruptcy advocates argue that such a fresh start can promote wealth accumulation and more prudent debt management (Howard, 1987; Porter and Thorne, 2006). However, we find that filers tend to accumulate substantially less wealth post bankruptcy than comparable nonfilers, and that filers are more likely to experience renewed debt repayment difficulties.

Specifically, we conduct two types of analysis on postbankruptcy financial health. First, we run Logit regressions of two indicators for financial stress on the same set of independent variables used in the above analysis. The first indicator, called "ever behind", is equal to 1 if the household has made any loan payments later than scheduled or skipped any payments, 0 otherwise; and the second indicator, "serious delinquency", is equal to 1 if the household has been behind in any loan payments by two months or longer, 0 otherwise. Second, we run OLS regressions of the ratio of net worth, defined as total assets net of total debt, to normal income, on the same set of independent variables.

The results are shown in Table 8. As shown in Column (1), unconditional on time since filing, filers are about 30 percent more likely to have ever been behind their debt payments

than comparable nonfilers. This margin is also statistically significant. As shown in Column (2), the similar margin applies to filers with different time since filing, although only two of the three coefficients are marginally statistically significant As shown in Column (3), unconditional on time since filing, filers are 36 percent more likely to be seriously delinquent than comparable nonfilers. However, Column (4) shows that this effect is due mostly to the significantly higher serious delinquency rates among those who filed between six and nine years earlier. As shown in Columns (5) and (6), relative to comparable nonfilers, the net worth of filers is substantially lower, by at least 70 percent of annual income. This gap persists even many years after filing.

The above results have two implications. First, the persistent financial stress and slow wealth accumulation suggest that for many filers, bankruptcy filing fails to generate an effective fresh start. Second, the credit risk for those who filed more than nine years earlier may not be correctly priced, in part due to the removal of bankruptcy record. While they appear to be similar to comparable nonfilers in the likelihood of obtaining credit and in the rate spreads they pay, they are more likely to fall behind in debt payment schedules, which in part is due to their more leveraged balance sheets.[23]

7 Conclusions

This paper studies household borrowing and financial health after filing for personal bankruptcy. Using a large national-wide representative dataset, the SCF, we document that, in general, bankruptcy filers have more restricted access to unsecured credit, and that, conditional on having access to credit, filers tend to borrow more on their credit cards and leverage more aggressively on collateralized loans. Filers also pay significantly higher borrowing costs across all types of credit. Some of these adverse treatments abate as the bankruptcy record is removed from credit reports ten years after the filing, with access to credit generally improved

[23] A caveat regarding to these statements is that other unobservable household characteristics may affect financial health and wealth accumulation.

and borrowing costs lowered. That said, we find that despite the debt discharge at the filing, bankrupt households are more likely to experience renewed financial difficulties and accumulate less wealth.

Financial hardship persists even more than ten years after the filings, suggesting that, for many bankrupt households, debt discharge may not have achieved its goal of providing a fresh start. In addition, our findings suggest that the credit risk for those who filed more than nine years earlier and thus have their bankruptcy flags removed from their records may not be correctly priced. While these filers are generally treated just like comparable nonfilers, they tend to have experienced more payment difficulties and have lower net worth. This mispricing suggests that further studies on the effect of restricting credit information on the informational efficiency of the consumer credit market would be useful.

The reduced form nature of our analysis limits the identification of how demand and supply of credit respond to a bankruptcy filing. However, we do find that filers whose bankruptcy records remain on their credit reports generally face lower supply of credit, while these households have higher demand for vehicle loans. In constrast, credit supply to filers with removed records is increased and these filers have higher demand for all types of credit relative to comparable nonfilers. For future research, we are looking into additional data, such as credit solicitations, to sharpen our identification of supply and demand effects. Finally, the estimates reported here should provide a more empirically grounded basis for calibrating equlibrium models of personal bankruptcy.

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Appendix

A Definitions of Selected Variables

Definitions on selected variables.

- "Normal income": Starting from the 1995 wave, the SCF asks "Is this income unusually high or low compared to what you would expect in a 'normal' year, or is it normal?" If the households answer that the income they reported for the previous year was unusually high or low, the SCF then asks "About what would your income have been if it had been a normal year?" We use this normal income measure to approximate the income levels in the years prior to the survey.

- "Overspending": The SCF asks "Including only monthly payments on your house or car and leaving aside any spending on investments, over the past year, would you say that your family's spending exceeded your family's income, that it was about the same as your income, or that you spent less than your income?" The households choose from (1) spending exceeded income; (2) spending equalled income; and (3) Spending was less than income. We define overspending as those who answered (1).

- "Credit attitude": The SCF asks the following question for a number of different types of loans: "People have many different reasons for borrowing money which they pay back over a period of time. For each of the reasons I read, please tell me whether you feel it is all right for someone like yourself to borrow money."

- Risk aversion: The SCF asks about households' attitude toward financial risks: "Which of the statements on this page comes closest to the amount of financial risk that you and your (spouse/partner) are willing to take when you save or make investments?" The households may choose from (1) take substantial financial risks expecting to earn substantial returns; (2) take above average financial risks expecting to earn above average returns; (3) take average financial risks expecting to earn average returns; and (4) not willing to take any financial risks. We define the choice (1) as high risk aversion and (4) as low risk aversion.

Table 1: Bankruptcy Filing Status in the Survey of Consumer Finance

This table shows the percent of households that reported having filed for bankruptcy in the Survey of Consumer Finances (SCF). The SCF asks how many years earlier a bankruptcy was filed, but, in the public data, all even numbers of years are rounded upward to the next odd number. We use the revised Kennickell-Woodburn weights provided by the SCF to compute the shares reported in the table. But, the number of observations refers to the number of households actually surveyed, not the number of implicates.

	Percent of households in survey year			
Filing status	1998	2001	2004	All waves
Nonfilers	91.49	89.97	89.00	90.11
Filers	8.51	10.03	11.00	9.89
1 year earlier	1.76	1.18	1.20	1.37
2-5 years earlier	2.04	3.09	3.12	2.77
6-9 years earlier	1.57	2.24	2.79	2.22
$>$ 9 years earlier	3.14	3.53	3.89	3.53
Number of observations	4,305	4,442	4,519	13,266

Table 2: Household Characteristics By Bankruptcy Filing Status

In this table we compare average household characteristics, including the demographics, income, and preferences, for nonfilers and filers in the SCF 1998, 2002, and 2004. See the Appendix for definitions of "normal income," "overspending," "credit attitude," and "risk aversion." For comparability across different survey waves, we express normal income in 2004 dollars.

Characteristics	Nonfilers	Filers
Age (mean)	43.4	45.0
Family size (mean)	2.8	2.9
Below high school (%)	11.4	12.3
High school (%)	29.4	39.5
Some college (%)	18.1	25.8
College (%)	41.0	22.8
Married (%)	64.5	58.0
Nonwhite (%)	26.8	29.2
Self-employed (%)	13.6	10.8
Normal income (mean, in 2004 $)	79.4	53.1
Overspending (%)	14.1	20.2
Credit attitude		
Pro installment loans	31.2	32.1
Willing to borrow for vacation	15.9	17.6
Willing to borrow when inc is low	47.6	50.4
Willing to borrow for jewelry	6.9	5.4
Willing to borrow for automobile	83.5	86.7
Willing to borrow for education	85.4	85.7
Risk aversion		
High risk aversion	32.8	44.6
Low risk aversion	4.9	4.8
N. of observations (un-weighted)	8,915	963

Table 3: **Statistics on Household Borrowing by Bankruptcy Filing Status**

All debt balance values are in 2004 dollars. Credit card, mortgage and car loans interest rate spreads are measured against yields on 2-, 10-, and 5-year Treasury securities. "Loan declined/discouraged" is defined as being actually declined when the household applied for loans in the past five years, or discouraged from borrowing when households did not apply because they expected that the application would be turned down should they have chosen to apply. The loan-to-value ratio (LTV) of home mortgages, car loan-to-income ratio, and mortgage and car loan interest rate spreads are valued at the year of the loan originations, but other statistics are valued at the SCF survey year.

Variables	Nonfilers	Filers
Panel A. Credit card		
Having credit card (%)	75.7	60.6
Credit card limit ($)	23,762	11,494
Credit limit/income (%)	26.7	18.5
Having credit card debt (%)	62.1	80.3
Credit card debt amount ($)	3,358	3,551
Card balance/income (%)	3.6	5.7
Card balance/limit (%)	14.1	30.9
Credit card spread (pp.)	9.87	11.61
Panel B. First-lien mortgages		
Having mortgage (%)	53.3	49.0
Mortgage balance owe now ($)	111,942	99,502
LTV at origination (%)	79.2	86.7
Mortgage rate spreads (pp.)	1.24	1.75
Panel C. Car loans		
Having car loans (%)	38.3	48.3
Current balance ($)	11,689	11,033
Loan-to-income (%)	18.2	19.9
Car loan spread (pp.)	4.50	6.90
Panel D. Overall borrowing and household financial health		
Loan declined/discouraged (%)	22.1	51.4
Having any debt (%)	84.3	89.3
Debt/asset (%)	16.4	34.7
Ever behind schedule (%)	20.1	33.8
60+ days delinquent (%)	7.6	16.0
Net worth/ normal income	5.35	2.18

Table 4: **Regression Results on the Effects of Bankruptcy Filing on Credit Card Debt**

This table shows regression results on the effects of bankruptcy filing on credit card debt. Columns (1) and (2) are based on Logit regressions of whether households have a credit card after filing for bankruptcy; Columns (3) and (4) are based on OLS regressions of credit limit and Columns (5)-(8) are based on tobit regressions of card balance censored at zero balance, conditional on having a credit card; and Columns (9) and (10) are based on OLS regressions of rate spreads conditional on having a positive balance. In all regressions, we include the following control variables besides bankruptcy filing status: household head age, education attainment, race, family size, marital status, risk aversion, credit attitude, and year-wave dummy variables. Standard errors are reported in the parenthesis, and estimated odds ratios for Logit regressions are reported in the brackets. *, **, and *** indicate the estimated coefficient is statistically significant at the 90, 95, and 99 percent of confidence levels, respectively.

	Having card		$\frac{\text{Credit limit}}{\text{Income}}$		$\frac{\text{Balance}}{\text{Income}}$		$\frac{\text{Balance}}{\text{Limit}}$		Rate spread	
Filing status	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ever filed	-0.672^{***}		-0.147^{***}		0.026		0.216^{***}		123.3^{***}	
	(0.086)		(0.025)		(0.022)		(0.022)		(22.7)	
	[0.511]									
1 yr earlier		-1.979^{***}		-0.233^{***}		0.057		0.189^{***}		198.8^{**}
		(0.217)		(0.088)		(0.036)		(0.043)		(83.3)
		[0.138]								
2-5 yrs earlier		-0.711^{***}		-0.226^{***}		-0.007		0.208^{***}		179.4^{***}
		(0.145)		(0.045)		(0.018)		(0.020)		(43.6)
		[0.491]								
6-9 yrs earlier		-0.421^{**}		-0.221^{***}		0.018		0.257^{***}		185.9^{***}
		(0.172)		(0.047)		(0.019)		(0.020)		(43.3)
		[0.657]								
> 9 yrs earlier		-0.227		-0.041		0.045^{***}		0.202^{***}		38.4
		(0.146)		(0.037)		(0.014)		(0.016)		(33.7)
		[0.797]								
R^2	0.322	0.316	0.097	0.099	0.410	0.412	0.215	0.215	0.036	0.038
N. of obs	9,870	9,870	7,719	7,719	7,719	7,719	7,807	7,807	7,457	7,457

Table 5: **Regression Results on the Effects of Bankruptcy Filing Status on First Lien Mortgages**

This table shows regression results on the effects of bankruptcy filing on first lien mortgages. Columns (1) and (2) are based on Logit regressions of whether households obtained a first lien mortgage after filing for bankruptcy, and conditional on having obtained a mortgage, Columns (3) and (4) are based on OLS regressions of loan-to-value ratios and Columns (5) and (6) are based on OLS regressions of rate spreads. In all regressions, we include the following control variables: household head age, education attainment, race, family size, marital status, risk aversion, credit attitude, and year-wave dummy variables. Standard errors are reported in the parenthesis, and estimated odd ratios for Logit regressions are reported in the brackets. *, **, and *** indicate the estimated coefficient is statistically significant at the 90, 95, and 99 percent of confidence levels, respectively.

	Having mortgage		$\frac{\text{mortgage debt}}{\text{house value}}$		Rate spread	
Filing status	(1)	(2)	(3)	(4)	(5)	(6)
Ever filed	-0.024		0.039**		33.9**	
	(0.100)		(0.020)		(13.0)	
	[0.976]					
1 yr earlier		−1.677**		0.057		-27.7
		(0.710)		(0.152)		(77.0)
		[0.187]				
2-5 yrs earlier		-0.146		0.030		65.9***
		(0.174)		(0.035)		(21.9)
		[0.864]				
6-9 yrs earlier		-0.052		0.107***		1.7
		(0.190)		(0.036)		(23.3)
		[0.949]				
>9 yrs earlier		0.315**		-0.011		36.6*
		(0.152)		(0.034)		(20.2)
		[1.371]				
R^2	0.045	0.046	0.147	0.148	0.183	0.184
N. of obs	10,666	10,666	2,437	2,437	2,181	2,181

Table 6: **Regression Results on the Effects of Bankruptcy Filing Status on Car Loans**

This table shows regression results on the effects of bankruptcy filing on car loans. Columns (1) and (2) are based on Logit regressions of whether households obtained a car loan after filing for bankruptcy, and conditional on having obtained a car loan, Columns (3) and (4) are based on OLS regressions of loan-to-normal income ratios and Columns (5) and (6) are based on OLS regressions of rate spread. In all regressions, we include the following control variables: household head age, education attainment, race, family size, marital status, risk aversion, credit attitude, and year-wave dummy variables. Standard errors are reported in the parenthesis, and estimates odd ratios for Logit regressions are reported in the brackets. *, **, and *** indicate the estimated coefficient is statistically significant at the 90, 95, and 99 percent of confidence levels, respectively.

	Having loan		$\frac{\text{car loans}}{\text{normal income}}$		Rate spread	
Filing status	(1)	(2)	(3)	(4)	(5)	(6)
Ever filed	0.244***		-0.006		192.4***	
	(0.056)		(0.010)		(34.6)	
	[1.276]					
1 yr earlier		0.316**		0.019		269.1**
		(0.174)		(0.030)		(96.0)
		[1.372]				
2-5 yrs earlier		0.081		-0.015		337.1***
		(0.100)		(0.017)		(58.0)
		[1.084]				
6-9 yrs earlier		0.303***		0.008		121.4*
		(0.104)		(0.019)		(72.7)
		[1.354]				
$>$ 9 yrs earlier		0.326***		-0.016		80.8
		(0.090)		(0.017)		(55.3)
		[1.386]				
R^2	0.075	0.075	0.362	0.362	0.103	0.111
N. of obs	10,666	10,666	1,654	1,654	1,654	1,654

Table 7: **Summary and Inferrence on Supply and Demand Effects**

All demand and supply effects are relative to comparable nonfilers. Results are based on statistical significance at the 95 or higher percent of confidence level for one-side hypothesis tests. Notations: S=Supply, D=Demand, Q=quantity, measured as either the likelihood of obtaining a loan or the amount of loan conditional on having a loan, R=spreads of loan interest rate over rate on comparable maturity Treasury securities, ↓=higher, ↑=lower, ∼=ambiguous.

	Credit Card		Mortgage		Car Loan	
Filing status	Estimates	Inferrence	Estimates	Inferrence	Estimates	Inferrence
1. Ever filed	Q↓, R↑	S↓	Q↑, R↑	D↑	Q↑, R↑	D↑
2. 1 yr earlier	Q↓, R↑	S↓	Q↓, R∼	S↓ or D↓	Q↑, R↑	D↑
3. 2-5 yrs earlier	Q↓, R↑	S↓	Q∼, R↑	S↓ or D↑	Q∼, R↑	S↓ or D↑
4. 6-9 yrs earlier	Q↓, R↑	S↓	Q↑, R∼	S↑ or D↑	Q↑, R↑	D↑
5. >9 yrs earlier	Q↑, R∼	D↑	Q↑, R↑	D↑	Q↑, R∼	D↑

Table 8: Regression of the Impact of Filing Bankruptcy on Financial Stress and Wealth Accumulation

This table shows regression results on the effects of bankruptcy filing on financial stress and wealth accumulation. Columns (1) and (2) are based on Logit regressions of whether households have ever been behind a loan payment, Columns (3) and (4) are based on Logit regressions of whether households have been 60 or more days delinquent on any loan payments, and Columns (5) and (6) are based on OLS regressions of wealth accumulation (measured as the ratio of net worth—total assets minus total debt—to normal income). In all regressions, we include the following control variables: household head age, education attainment, race, family size, marital status, risk aversion, credit attitude, and year-wave dummy variables. Standard errors are reported in the parenthesis, and odds ratio estimates, when applicable, are reported in the brackets. *, **, and *** indicate the estimated coefficient is statistically significant at 90, 95, and 99 percent level, respectively.

	Ever Behind		60+ Days Delinquent		Wealth Accumulation	
Filing status	(1)	(2)	(3)	(4)	(5)	(6)
Ever filed	0.274^{***}		0.310^{**}		-0.844^{***}	
	(0.098)		(0.137)		(0.085)	
	[1.316]		[1.363]			
1 Year Earlier						-1.029^{***}
						(0.196)
2-5 Years Earlier		0.284^{*}		0.251		-0.765^{***}
		(0.157)		(0.211)		(0.139)
		[1.329]		[1.286]		
6-9 Years Earlier		0.279		0.451^{**}		-0.702^{***}
		(0.181)		(0.234)		(0.158)
		[1.322]		[1.571]		
>9 Years Earlier		0.262^{*}		0.251		-0.933^{***}
		(0.154)		(0.218)		(0.145)
		[1.299]		[1.285]		
R^2	0.148	0.148	0.174	0.172	0.374	0.374
N. of obs	6,820	6,820	6,820	6,820	7,936	7,936