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Credit Access After Consumer Bankruptcy Filing: New Evidence

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Abstract

This paper uses a unique data set to shed new light on credit availability to consumer bankruptcy filers. In particular, our data allow us to distinguish between Chapter 7 and Chapter 13 bankruptcy filings, to observe changes in credit demand and credit supply explicitly, and to differentiate existing and new credit accounts. The paper has four main findings. First, despite speedy recovery in their risk scores after bankruptcy filing, most filers have much reduced access to credit in terms of credit limits, and the impact seems to be long lasting (well beyond the discharge date). Second, the reduction in credit access stems mainly from the supply side as consumer inquiries recover significantly after the filing, while credit limits remain low. Third, new lenders do not treat Chapter 13 filers more favorably than Chapter 7 filers. In fact, Chapter 13 filers are much less likely to receive new credit cards than Chapter 7 filers even after controlling for borrower characteristics and local economic environment. Finally, we find that Chapter 13 filers overall end up with a slightly larger credit limit amount than Chapter 7 filers (both after the filing and after discharge) because they are able to maintain more of their old credit from before bankruptcy filing. Our results casts doubt on the effectiveness of the current bankruptcy system in providing relief to bankruptcy filers and especially its recent push to get debtors into Chapter 13.

Keywords: bankruptcy, credit limit, credit performance, financial crisis, bankruptcy reform
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1. Introduction

The U.S. personal bankruptcy filing rate has been steadily trending upward since the outbreak of the mortgage crisis in 2007, after a brief retreat following a spike in October 2005 due to the implementation of the new bankruptcy law.[1] By 2010, personal bankruptcy filings reached 1.3 per thousand people per quarter, near the prereform level in 2004. This development has motivated an increasing literature to study the postbankruptcy credit availability for bankrupt households. This paper contributes to this literature by bringing a unique proprietary data set that allows us to distinguish between bankruptcy Chapters 7 versus 13, new and existing accounts, and, most important, demand and supply factors. Results derived from the new analysis are crucial for policy debates that aim to either rehabilitate bankrupt borrowers or improve the current bankruptcy system.

Under the current consumer bankruptcy law, households obtain a fresh financial start by having their unsecured debt partially or completely discharged. In exchange, they give up either some of their current assets under Chapter 7 or some of their future earnings under Chapter 13. Additionally, they must wait for several years between two consecutive bankruptcy filings. Finally, a bankruptcy filing record stays on the filer's credit report for several years after filing under either Chapter 7 or 13.

A successful bankruptcy filing is likely to affect both credit demand and credit supply. For credit demand, the filing households now have a stronger balance sheet with less or no unsecured debt and more disposable income; thus, they are likely to have less demand for credit. On the other hand, because of the improved balance sheet, the filing households may be

[1] The implementation of the 2005 Bankruptcy Abuse Prevention and Consumer Protection Act in October 2005 caused a rush to file in October 2005.

able to access more and cheaper credit. For credit supply, the improved balance sheet makes borrowers more creditworthy to lenders. However, a bankruptcy flag on the credit report also signals to lenders that the borrowers may be the risky type and thus more likely to default again compared with nonfilers with similar balance sheets. Finally, the fact that Chapter 7 filers cannot have their debt discharged again under the bankruptcy law for at least eight years may entice some lenders to lend to borrowers postbankruptcy filing.[2]

The literature on postbankruptcy credit availability and credit performance has been small but growing. Earlier studies include Staten (1993), Stavins (2000), and Musto (2004). Using credit reports of a random sample of 2,000 people who filed for bankruptcy between 1978 and 1988, Staten (1993) finds that consumers managed to obtain new credit one year or five years after bankruptcy filing and that filing under Chapter 13 did not reward them with greater credit access. Furthermore, postbankruptcy delinquency rates were high especially for Chapter 13 bankruptcy filers. Using data collected in the 1998 Survey of Consumer Finances, Stavins (2000) reports that bankruptcy debtors are less likely to have credit cards than nonbankruptcy debtors. However, bankruptcy debtors are more likely to be in default on credit obligations than nonbankruptcy debtors even years after bankruptcy filing. Musto (2004) uses credit bureau files to analyze the impact of removing bankruptcy information from the filer's credit record. He finds that credit scores and credit limits increased immediately after the removal of the bankruptcy flag, suggesting that lenders reduced credit supply to borrowers when these borrowers were flagged on their credit report for bankruptcy filing.

[2] The wait period for Chapter 7 filers was raised from six years to eight years under the Bankruptcy Reform in October 2005.

More recently, Porter (2008) analyzes a large longitudinal data of consumer bankruptcy debtors, collected as part of the Consumer Bankruptcy Project, a large interdisciplinary study of consumer bankruptcy that began in 2001 and ended in 2004. She finds that creditors repeatedly solicited debtors to borrow after bankruptcy, especially unsecured debt. Furthermore, debtors reported more difficulty in obtaining secured loans (car loans and mortgages) than unsecured loans (credit card debt). Porter (2010) follows up on the 2008 study and analyzes debtors' borrowing decisions after bankruptcy filing. She finds that most debtors initially refused new credit but began to borrow as years elapse. Specifically, she finds that bankruptcy filers have fewer credit cards than the general population although they seem to borrow in about the same proportion to their incomes as nonfilers.

Using a large sample of credit reports that include debtors who filed for bankruptcy in 2004, Cohen-Cole, Duygan-Bump, and Montoriol-Garriga (2013) document that the access to credit was limited for a short period of time after any personal bankruptcy filing and that the limitation was more evident for prime borrowers. Using the Survey of Consumer Finances, Han and Li (2011) investigate differences in credit availability and the cost of credit between personal bankruptcy filers and nonfilers. In contrast to Porter (2008), they show that relative to nonfilers, bankruptcy filers had limited access to unsecured credit, but they were able to borrow larger amounts of secured credit after bankruptcy filing than nonfilers. Filers also paid higher interest rates on all types of debt. Han, Keys, and Li (2011) directly explore credit supply after bankruptcy filing using credit card mailings and find that bankruptcy filers continued to receive credit card solicitations. However, compared with nonbankruptcy filers, the credit card

terms offered to bankruptcy filers are inferior; they are subject to higher interest rates and fees and usually no rewards.

The innovation of our paper lies in our unique data. First, our data spans the period from 2002 to 2013. This allows us to study different borrowing and lending patterns and credit performance after bankruptcy filing before and after the implementation of the Bankruptcy Abuse Prevention and Consumer Protection Act of 2005, and before and after the 2007–2008 Great Recession. Second, our large credit bureau data make it possible to distinguish between Chapter 7 and Chapter 13 bankruptcy filings, to observe changes in credit demand and credit supply explicitly, and to differentiate between existing lenders and new lenders.[3] Finally, we are able to study credit access separately not only after bankruptcy filing but also after bankruptcy discharge. This distinction is important especially for Chapter 13 filers because the time period between filing and discharge is long, typically lasting three to five years.

We focus on unsecured debt access and find four main results. First, although credit scores rebound quickly after bankruptcy filing, filers (those filing under Chapters 7 and 13) experience substantially reduced access to unsecured credit. Second, the reduction in credit access stems mainly from the supply side. The demand for credit as measured by consumer credit inquiries recovers significantly after the filing, especially for Chapter 7 filers. However, credit limits remain low for a long time after filing (and even at six quarters after the discharge). Third, although new lenders are more willing to lend to filers after their filings, as concluded in Han, Keys, and Li (2011), this statement holds only for Chapter 7 filers, not for Chapter 13

[3] In that respect, our paper is closest in spirit to Staten (1993).

filers.[4] Our results suggest that new lenders do not view Chapter 13 filers more favorably than Chapter 7 filers. In fact, unlike Chapter 7 filers, Chapter 13 filers are less able to obtain new credit, but they are better able to hold on to their old credit from existing lenders. Finally, as a further contribution to the literature, we repeat our analysis on credit access for the period following the successful *discharge* date, in addition to *filing* date. One potential drawback of focusing only on the period following the filing date, which is the focus of most previous bankruptcy studies, is that Chapter 7 and Chapter 13 filers may not be directly comparable.[5] Our analysis around the discharge date has provided useful insights and strong support of our findings around the filing date. To our surprise, bankruptcy filers continue to suffer a dramatic decline in unsecured credit available to them even six quarters after their bankruptcy discharge.

The rest of the paper is organized as follows. In Section 2, we briefly discuss bankruptcy laws and their impact on consumer credit (both borrowing and lending) postbankruptcy filing. In Section 3, we describe our data in detail. We present our empirical analysis in Section 4, and we conclude in Section 5.

2. Consumer Bankruptcy Legislation and Its Impact on Consumer Credit

2.1 The Bankruptcy Laws

The key feature of U.S. personal bankruptcy law is that it contains two basic types of personal bankruptcy proceedings: Chapter 7 and Chapter 13. Before the passage of the 2005 reform act, a debtor's choice between these two bankruptcy options was voluntary. The 2005

[4] This finding is particularly interesting in light of the 2005 bankruptcy reform that effectively pushes filers into Chapter 13 repayment plans.

[5] Chapter 7 filers are generally discharged within two quarters, while Chapter 13 filers would have to first complete the bankruptcy payment plan for three to five years following the filing date.

reform act abolished this right. To file under Chapter 7, debtors whose incomes are above their (residential) state median family income must now pass an income test called the "means test."[6] If their incomes are above the median level and/or they fail the "means test," then the debtors must file under Chapter 13 (instead of Chapter 7), if they file for bankruptcy at all.

Chapter 7 filing is often called "liquidation." Under Chapter 7, a debtor gives up all his assets above a certain exemption level.[7] In exchange, the debtor gets almost all of his unsecured debt discharged. The exemption level varies by states. A debtor cannot file for bankruptcy for eight years under Chapter 7 or four years under Chapter 13 after the last Chapter 7 discharge (the time gap, however, is calculated between two filing dates).

Chapter 13 filing is also called a "wage earner's plan." Under Chapter 13, a debtor gets to keep all of his assets. However, he must repay some of his debt out of his future earnings through a repayment plan over three to five years. Only after the completion of the repayment plan will the debtor obtain a legal discharge of his remaining debts. A debtor cannot file for Chapter 13 bankruptcy again for two years after a Chapter 13 filing. In addition, he is required to wait up to six years before filing for Chapter 7 bankruptcy, especially if he did not complete his Chapter 13 payment plan. As mentioned earlier, all bankruptcy filings for both Chapters 7 and 13 stay in the credit report for 10 years and seven years, respectively. The credit reports are available to all lenders.[8]

[6] The "means test" requires that (i) a filer's monthly income net of allowable expenses calculated according to IRS rules is less than $166.67 per month, and (ii) a filer's net monthly income multiplied by 60 is less than 25 percent of his unsecured debt.

[7] Generally, a bankruptcy debtor can exempt a certain amount of his property during bankruptcy. If done right, this can potentially save most of the property during a bankruptcy. The exemption amount varies from state to state, and it is expected to have some impact on the decision to file under bankruptcy Chapter 7 or 13 or not to file at all.

[8] All other nonbankruptcy defaults can stay on a credit report for only seven years.

Given the differences in bankruptcy provisions under Chapter 7 and Chapter 13, it is not surprising that Braucher, Cohen, and Lawless (2012) find that Chapter 7 and Chapter 13 filers have very different financial characteristics. Specifically, more than 90 percent of all Chapter 7 debtors have no assets to liquidate because either bankruptcy exemptions leave them with a minimal amount of assets or because the debtors have pledged all of their assets as collateral, and therefore, put the assets beyond the reach of the bankruptcy trustee.[9] Jiménez (2009) provides similar evidence in his study of 2,500 bankruptcy cases filed between January and March 2007 in the nation: 93 percent of Chapter 7 filers do not have any nonexempt assets to distribute to unsecured creditors. Put simply, in practice, Chapter 7 seems to maximize ideal of forgiveness, giving "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" (Local Loan C. v. Hunt, 292 U.S. 234, 245 (1934)).

Turning to other factors that affect borrowers' bankruptcy and chapter choice decisions, Domowitz and Sartain (1999) combine a sample of households that filed for bankruptcy under Chapter 7 in the early 1980s and a representative sample of U.S. households that includes detailed financial information. They find that medical and credit card debts are the strongest contributors to bankruptcy filing. Higher marriage rates, employment rates, income, and equity relative to debt all encourage the choice of Chapter 13 filing over Chapter 7. Nelson (1999) also studies consumer bankruptcy and chapter choice using state panel data from fiscal year 1989 to 1996. He finds that households who experienced recent divorce and unemployment and had no health insurance were more likely to file under Chapter 7, while less generous homestead

[9] Their research is based on two sources: One is data from the Consumer Bankruptcy Project, and the second is an experimental vignette sent to a random sample of consumer bankruptcy attorneys who represented debtors.

exemption and strict garnishment laws encouraged debtors to file for Chapter 13 instead of Chapter 7.[10] Lefgren, McIntyre, and Miller (2013) present evidence that attorneys often encourage debtors to file under Chapter 13 in order to maximize their profits as attorney fees are higher for Chapter 13 filing. Attorney fees typically range from $2,500 to $3,000 for a Chapter 13 but only $1,000 for the less-complicated Chapter 7 filing (U.S. Government Accountability Office 2008).

Finally, Chapter 7 filers typically receive a discharge within six months of filing in practice. By contrast, the bankruptcy discharge for Chapter 13 is granted only after the completion of all payments under the Chapter 13 plan that can be anywhere from three to five years. Whitford (1994), Norberg and Velkey (2007), and Eraslan, Kosar, Li, and Sarte (2014) estimate that about two-thirds of Chapter 13 filers do not complete the payment plan and thus are not discharged. Only one-third of Chapter 13 filers manage to complete the repayment plan. The average recovery rate of confirmed total debt is about 30 percent and that to unsecured debt is close to zero.[11]

2.2 The Impact of the Law on Post-Bankruptcy Borrowing and Lending

From the borrowers' viewpoint, the immediate impact from bankruptcy discharge is an improved balance sheet and an increased disposable income for all bankruptcy filers. All else

[10] The homestead exemption is a legal regime designed to protect the value of the homes of residents from property taxes, creditors, and circumstances arising from the death of the homeowner spouse. In some states, homestead protection is automatic. In many states, however, homeowners will not receive the protections of the law until they file a claim for homestead exemption with the state.

[11] Whitford (1994) reported information from the 1993 June 10 Statistical Report based on surveys of Chapter 13 trustees by the National Association of Chapter 13 Trustees. Norberg and Velkey (2007) examined a sample of 795 Chapter 13 cases filed in 1994 in several federal judicial districts including the Northern and Southern Districts of Georgia, Middle District of North Carolina, Middle and Western Districts of Tennessee, District of Maryland and Western District of Pennsylvania. In each district, a quota sample of roughly 1 percent of the Chapter 13 cases filed in 1994, but not fewer than 100 cases, was pulled. Eraslan, Kosar, Li, and Sarte (2014) studied all Chapter 13 bankruptcy filings between August 1, 2001, and August 1, 2002, in the District of Delaware.

equal, this wealth effect is likely to be larger for Chapter 7 filers than for Chapter 13 filers because Chapter 7 filers have all of their unsecured debt discharged, while Chapter 13 filers still have to repay some of their debts over the three to five years of the payment plan period. As a result of their improved balance sheet and increased disposable income, filers may reduce their credit demand in the short run. In the long run, however, as they are able to access credit at lower cost, these filers may leverage up again.

From the lenders' point of view, an improved balance sheet and more disposable income suggest that the borrowers are more creditworthy (i.e., more likely to repay their loans). In addition, the fact that these borrowers cannot file again for some period of time may entice some lenders to lend to these people since, in the event of default, the lenders can garnish the borrowers' assets or earnings.[12] Thus, bankruptcy filers could become a good target for high-yield lenders. A bankruptcy flag on the credit report, however, indicates to lenders that the borrowers may be the risky type and thus more likely to default again in the future compared with nonfilers with similar financial backgrounds. Therefore, lenders may reduce their lending to these borrowers or lend at more onerous terms.

To summarize, after a bankruptcy filing, we expect credit demand to decline at least in the short run and credit supply to contract at least for conventional lenders. In the medium to longer term, we expect both credit demand and credit supply to recover. Furthermore, we expect the recovery effect to be slower for Chapter 13 than for Chapter 7 filers due to a longer period to discharge. We examine the decision to file and the impacts, which are expected to vary with bankruptcy chapters.

[12] As discussed earlier, the required waiting period varies with bankruptcy chapters and lenders may also factor that into their considerations.

3. Data Description

Our analysis utilizes the data set on consumer credit — the Federal Reserve Bank of New York (FRBNY)/Equifax Consumer Credit Panel — combined with account-level information from the Federal Reserve Bank of Philadelphia's Equifax Consumer Credit Panel. The panel is a nationally representative 5 percent random sample of all individuals with a Social Security number and a credit report (usually aged 19 and over).[13] In particular, the panel has a total of 12 million primary consumers, randomly selected into the data set based on the last two digits of their Social Security number and the criteria that they must have at least one of the following in their credit bureau files: a public record (e.g., a judgment) within the past seven years, bankruptcy filing within the past 10 years, an open credit account that is regularly updated by the lender or servicer, or a closed account that continues to be reported for up to seven years if the account was not in good standing (Wardrip and Hunt 2013).[14]

The data contain quarterly information on an individual's borrowing and payment of various loans (loans from bank cards and department store cards, car loans, mortgages, home equity loans, and student loans). The data also include information about the individual's demographic and risk characteristics such as age, zip code of their mailing address, credit score, and delinquency status (at the account level), including bankruptcy filing and chapter choice. Finally, the data allow us to identify the specific dates when a credit account was open or closed, when an individual filed for bankruptcy, and when a bankruptcy filer failed or

[13] Equifax is one of the three major consumer credit reporting agencies in the U.S. (Equifax, Experian, and TransUnion). Slightly more than 8 percent of households do not include a member with a credit report (Brown, Haughwout, Lee, and van der Klauuw 2011). These consumers typically have either never obtained a mainstream loan type (credit card, mortgage, or auto loan) or have not obtained such a product for a very long time.

[14] The data, however, do not include actual Social Security numbers, or names, actual addresses, demographics (other than age), or other codes that may be used to identify specific consumers or creditors.

successfully obtained a debt discharge in bankruptcy. In addition to the Equifax data, we obtain county-level unemployment rates from the Bureau of Labor Statistics and state-level home exemption data from Elias (2006).

Our data period covers the period 2002:Q1 to 2013:Q4, consisting of approximately 600,000 bankruptcy filers. We examine individuals who filed for Chapter 7 or Chapter 13 bankruptcy during this period and have subsequently obtained a debt discharge by 2012:Q2 to allow for at least six quarters of performance period after discharge.[15] A large number of Chapter 13 filers do not complete their payment plans and do not receive a discharge; they are not included in our analysis. If an individual files twice during our sample period, we treat the filings as two separate events. Our analysis focuses on two key event dates: the filing date and the discharge date.

We separate borrowers into four groups, according to the timing of the event date (filing or discharge): the pre-BK reform period (2002:Q1 to 2005:Q3), the post-BK reform but precrisis period (2005:Q4 to 2007:Q2), the financial crisis period (2007:Q3 to 2009:Q4), and the postcrisis period (2010:Q1 to 2010:Q4). The 2005 Bankruptcy Reform Act became effective in October 2005. A large number of bankruptcy filings in 2004–2005 account for "opportunistic" filers who rushed to beat the deadline to file under the old legislation. The second half of 2007 is when the mortgage crisis occurred, and the recession was officially announced in August 2007. Although the NBER committee dates 2009:Q3 as the end of the recession, many aspects

[15] Since a typical Chapter 13 repayment plan lasts three to five years, it is likely that some of the Chapter 13 filers who filed in 2009–2010 would not be included in some of our regression analysis (performance after discharge) unless they were discharged by 2012:Q2.

of the financial markets (such as banking profits and unemployment rates) did not start recovering until 2010 due to the public's fears of a double-dip recession.[16]

New Versus Old Credits: We trace each individual's credit record at the account level to identify any new credit cards that were opened after the bankruptcy filing/discharge month. In particular, we calculate the number of filers who received new credit cards, the number of new and old active credit cards,[17] and the dollar amount of the credit balance — up to six quarters before and following the bankruptcy filing or discharge date.

Credit Inquiries: To examine the demand for credit by bankruptcy filers, we collect information about the number of "hard" credit inquiries (i.e., credit applications) by each individual filer during the past three months, as reported in the Equifax database. A larger number of inquiries by bankruptcy filers indicate greater interest in getting access to credit. This information is collected at the end of each quarter from the period six quarters prior to the bankruptcy filing to six quarters after the filing.

Credit Limit: Our data also provide the credit limit for each account. It is the most that a credit card company will allow a cardholder to take out at once on a card. This limit is set based on a variety of factors that impact an individual's ability to make interest and principal

[16] In 2010:Q1, bank profits soared to their highest level in two years: a total of $18 billion in quarterly profits for the industry. The five largest U.S. banks (Bank of America, JP Morgan Chase, Citigroup, Wells Fargo, and Goldman Sachs) reported $15.6 billion in profits in 2010:Q1 and ended with $60.4 billion in annual profits for 2010. The unemployment rate remained near a quarter-century high at 9.4 percent as of August 2009. The top 10 reasons cited for a double-dip recession at the time were: 1) inflation,2) low investment return, 3) a drop in auto industry revenues, 4) a fall in oil prices, 5) federal budget cuts and cuts in government jobs by 450,000, 6) China's economy slowing, 7) unemployment, 8) the debt ceiling, 9) lack of access to credit, and 10) a housing market in which more than one-fourth of mortgages on single-family homes remained underwater (McIntyre 2011).

[17] Note that credit becomes inactive if there is no activity for at least six months.

payments such as self-reported income and payment history. The credit limit thus captures the amount of credit that lenders are willing to offer (the supply of credit).

4. Empirical Evidence

We provide empirical evidence in several steps. First, we summarize the demographics and financial status of bankruptcy filers. Then, we describe the postbankruptcy filing (and postbankruptcy discharge) equilibrium borrowing for Chapter 7 and Chapter 13 filers for the four different filing (discharge) periods: prereform, postreform/precrisis, crisis, and postcrisis. Next, we report credit demand and supply separately followed by a description of loan performance. Finally, we use regression analysis to formally test the hypothesis that lenders treat Chapter 13 filers less favorably than Chapter 7 filers.

It is important to point out that while the amount of time between the filing and discharge dates tends to be very short (within six months) for Chapter 7 filers, it is much longer for Chapter 13 filers, averaging 40 months in our sample. We conduct parallel analysis of credit access and performance around both filing and discharge dates, controlling for the risk characteristics of the filers and the economic conditions, to allow a better comparison between Chapter 13 and Chapter 7. The reason for doing so is that, for Chapter 7 filers, any observed credit access and credit performance up to six quarters following the filing date would cover the period right around and after the discharge date as well, but this would be the period well before discharge for Chapter 13 filers. Likewise, credit access and credit performance up to six quarters following the discharge date could mean comparing credit access and credit performance under a very different economic environment for the different type of filers. For

example, a bankruptcy filing in 2005 would be associated with a discharge during the boom period for Chapter 7 filers, but it would be during a deep financial crisis period for Chapter 13 filers.

4.1 Characteristics of Chapter 7 Versus Chapter 13 Filers

Table 1 provides summary statistics of Chapter 7 and Chapter 13 bankruptcy filers as of the filing quarter and the discharge quarter for the four subperiods that we study. Overall, we observe some differences between Chapter 7 and Chapter 13 filers in terms of their ages and credit scores, at filing or at discharge.[18] Filers have much higher credit scores at discharge than at filing. As the economy moved into the recession, the average age and risk score for both Chapter 7 and Chapter 13 filers rose, indicating that older and previously financially sound debtors experienced severe financial distress as the recession deepened. As expected, the majority of bankruptcy filers had credit card debt, more so at filing than at discharge. Chapter 13 filers were more likely to have secured debt (auto loans and mortgages) than Chapter 7 filers at filing and mostly more first mortgages at discharge. Interestingly, the proportion of filers with delinquent (at least 60 days past due) first mortgages at filing rose significantly from the precrisis to the postcrisis period, especially for Chapter 13 filers.[19]

Figure 1 charts filers' average risk scores from six quarters before to six quarters after the bankruptcy filing for Chapter 7 versus Chapter 13 filers. For all filing periods and for both Chapter 7 and Chapter 13 filers, we observe that average credit scores deteriorated

[18] The Equifax risk score is within the range of 350 to 800.

[19] This is consistent with the strategic default hypothesis, which states that people have an incentive to default on their mortgages (and file for bankruptcy) when the value of the home falls below the loan amount; see Jagtiani and Lang (2011).

substantially, leading to the bankruptcy filing as filers started falling behind on their loan payments. The recovery in credit score was also very dramatic and took place immediately after the filing for Chapter 7 filers and one quarter after the filing for Chapter 13 filers. Both types of filers returned roughly to their previous risk score levels (as of four to six quarters prior to bankruptcy filing) within about one year after filing, well before bankruptcy discharge for Chapter 13 filers. The observed speedy recovery in risk score suggests that bankruptcy filers may have been completely rehabilitated and regained full access to the credit market shortly after the bankruptcy filing. A closer look at their balance sheets, however, reveals otherwise (this is discussed later in this paper).

Similar plots around discharge dates are presented in Figure 1A in the appendix — for the four periods of bankruptcy discharge date. Consistent with the results reported in Figure 1, credit scores seemed to start to rebound well before the discharge date for all filers but much more so for Chapter 13 filers. This suggests that it is probably the waiting period (before they are allowed to file again), rather than the actual discharge process (the balance sheet improvement), that gives these filers higher credit ratings soon after filing.

4.2 Equilibrium Credit Access

Credit access statistics (at the account level) for Chapter 7 and Chapter 13 filers are summarized in Table 2. Specifically, we report the total number of filers (with at least one credit card), the total number of new and old active cards, the total credit limit of new and old active cards (in millions), and the total balance (in millions) at the time of the filing and as of two, four, and six quarters following the filing date. A few observations stand out. First, both Chapter 7

and Chapter 13 filers are able to get new credit cards almost right after their bankruptcy filing. Second, the number of new cards continues to rise but remains a small fraction of what filers had prior to bankruptcy filing. Surprisingly, a significant number of old active cards has been kept as long as six quarters after filing. As expected, Chapter 13 filers are better able to keep their old active cards compared with Chapter 7 filers. Finally, in terms of credit limit, both Chapter 7 and Chapter 13 filers suffer a dramatic decline in credit limit on average for at least six quarters (or longer) after filing. While the credit limit on the new cards increased steadily after filing, the amount remained small compared with what they had prior to bankruptcy filing.

Similar credit access statistics are reported in Table 2A (in the appendix), focusing on periods following the discharge date. We observe a much different picture here (between Chapter 7 and Chapter 13 filers) when comparing credit limit as of discharge with credit limit six quarters after discharge. As with the case at filing, the total number of new cards and new credit limits increased substantially, while the total number of old cards and old credit limits declined steadily. Interestingly, we observe a drastic difference between Chapter 7 filers and Chapter 13 filers in terms of their combined credit limit as of six quarters after discharge. The credit limit remains a small fraction of total credit limit as of discharge for Chapter 7 filers, but the total credit limits are on average larger than at discharge date for Chapter 13 filers.

Figure 2 charts the percent of filers who received a new card before and after the filing dates and Figure 2A (in the appendix) presents the same chart before and after the discharge dates. From Figure 2, mirroring the decline in credit score that led to the bankruptcy filing, the fraction of people with a new bank card declined substantially. However, most Chapter 7 filers started opening new cards almost immediately after filing. With the exception of the crisis

period (2007:Q3 to 2009:Q4), within one year or less, the percent of filers receiving new cards is back to the level six quarters before the filing. On the contrary, we do not observe an immediate rebound for Chapter 13 filers. Figure 2A shows that for Chapter 13 filers, the recovery started at around the discharge quarter, which is up to three to five years after filing, controlling for the four discharge periods described earlier.

Our results suggest that the trend (i.e., that niche banks targeting households that have just filed for bankruptcy) documented in Han, Keys, and Li (2011), applies mostly to Chapter 7 filers. While credit scores rebound soon for filers after they filed for both Chapter 13 and Chapter 7, Chapter 13 filers continued to have difficulty getting new cards (relative to Chapter 7 filers) until after the discharge date. There are two likely reasons for this observation. First, the wealth effect discussed earlier in Section 2 is larger for Chapter 7 filers than for Chapter 13 filers as relatively more debt is discharged (increased disposable income) under Chapter 7. Second, the length of time that Chapter 13 filers have to wait before they can file for bankruptcy again is shorter than that for Chapter 7 filers, making Chapter 13 filers less appealing to lenders who intend to garnish wages after default.

4.3 Demand for Credit by Chapter 7 Versus Chapter 13 Filers

The observed reduction in equilibrium access to credit obviously is a reflection of reduced credit demand or reduced credit supply or both. The credit bureau lists all credit inquiries made by consumers, lenders, or other agencies such as utility companies, etc. We use the so-called “hard” inquiries (i.e., inquiries resulting from applications for new credit). In our view, this is a good proxy for consumers’ credit demand. It is true that these inquiries will not

capture the needs of discouraged consumers. Put differently, some consumers may feel that they will not qualify for new credit and thus do not make inquiries. Unfortunately, absent survey data, it is not possible to capture the demand of these consumers.

Figure 3 charts the average number of hard inquiries by bankruptcy filers from six quarters before to six quarters after their bankruptcy filing date for Chapter 7 as well as for Chapter 13 filers. A large number of inquiries indicated greater interest in getting access to credit. For the periods before the financial crisis, the average number of credit inquiries starts declining up to two quarters prior to bankruptcy filing. Interestingly, during and after the crisis periods, we observe that credit inquiries start declining much earlier. This is consistent with the observation that bankruptcy filers load up their credit card debt prior to the filing since unsecured debt can be discharged under bankruptcy. Furthermore, credit demand is much higher for Chapter 13 than for Chapter 7 filers prior to the bankruptcy filing. After the filing, credit demand starts to recover, though much more slowly for Chapter 13 filers than for Chapter 7 filers. Overall, credit demand returns to roughly the previous level (as of before the filing) for Chapter 7 filers within one year, but it remains low for an extended period for Chapter 13 filers. The impact on credit demand on Chapter 13 filers seems to be long lasting (up to five years after Chapter 13 filing).

Similar plots for the discharge event date are presented in Figure 3A (in the appendix). The profile for Chapter 13 filers suggests that the recovery in credit demand by Chapter 13 filers began slightly before the discharge date, which is about three to five years after filing.

4.4 Credit Supply to Chapter 7 Versus Chapter 13 Filers

As discussed earlier, a credit limit is the maximum amount of credit that a lender is willing to extend to a borrower. Therefore, in our view, credit limits capture mostly credit supply. In Figure 4, we chart the average combined credit limit (for all cards that are not in bankruptcy) per bankruptcy filers during the periods before and after the filing. It is evident that lenders started cutting credit limits substantially as much as two quarters prior to the bankruptcy filing, for all filing periods and for both Chapter 7 and Chapter 13 filers. Credit limits bottomed out around two quarters following the filing and then stayed flat at a very low level for at least six quarters after the filing, regardless of whether they were for Chapter 7 or Chapter 13 filers. At its lowest point, the average total credit limit is only about 10 to 15 percent of its peak level prior to the filing. Further, our data indicate that credit supply remains at this low level even after bankruptcy discharge, as shown in Figure 4A (in the appendix). Our results thus present strong evidence that lenders substantially reduced lending to bankruptcy filers even in the long run (up to more than six years or longer for Chapter 13 filers), despite the improvement in their credit scores.[20]

4.5 Do Lenders Treat Chapter 13 Filers Differently?

Our descriptive analysis so far suggests that lenders do not treat Chapter 13 filers any more favorably than Chapter 7 filers. In fact, Chapter 13 filers are much less likely to receive new credit cards and have fewer credit cards than Chapter 7 filers for years after filing. In

[20] As discussed in the previous section, although new lenders were willing to offer credit to bankrupt households, these accounts had much smaller limits and was not enough to offset the cutback by existing lenders. Chapter 13 filers have greater difficulty getting new credit than Chapter 7 filers, but they are able to keep more of their old credit from before bankruptcy filing.

addition, lenders dramatically cut credit limits regardless of whether they are for Chapter 7 or Chapter 13 filers. However, total credit limit available to Chapter 13 filers seems to be slightly larger than that of Chapter 7 filers on average.

We now test this stylized fact formally. We design our analysis to also control for the endogeneity problem in the two-stage regression analysis with robust standard errors. The endogeneity problem arises because the differences in credit access among Chapter 7 and Chapter 13 filers may be one of the factors in their decision to file Chapter 7 versus Chapter 13. Additionally, this decision of which chapter to file could also be related to some nonrandom routing bias (in favor of one chapter over the other) by the local district courts.[21] In other words, both the district courts and the filers' financial characteristics influence the decision on which chapter to file for bankruptcy. In addition, the homestead exemption is also known to provide an incentive for people to file for Chapter 7 bankruptcy — the larger the exemption, the more likely Chapter 7 filing would provide greater relief of financial distress.

Specifically, we utilize two-stage structural equation models in our analysis where we model the decision to file for Chapter 13 (rather than Chapter 7) in the first stage, controlling for the filers' risk characteristics, local economic situation, the district court fixed-effect, and dollar amount of the homestead exemption. There are a total of 90 district courts associated with the bankruptcy filing events in our sample (no observation in District 5 and 92). Of these 90 district courts, we include 89 district indicators in the analysis, with District 1 being the base case. For the homestead exemption, the control factor is measured in terms of natural log of the state exemption amount. For states that do not have the exemption limit, the exemption

[21] The tendency to use Chapter 13 versus Chapter 7 is known to vary by district; see Braucher, Cohen, and Lawless (2012) for more details. We thank our referees for pointing this out.

amount is assumed to be $1 million (i.e., the exemption is capped at $1 million), and for states that do not allow for any exemption, the exemption amount takes the value $1. The results are reported in Table 3 (for performance following filing date) and Table 3A in the appendix (for performance following discharge date). Overall, the signs of coefficients of the control factors in both Stage 1 and Stage 2 of the analysis are as expected.

In Stage 1, the significantly negative coefficients of the homestead exemption variable (measured as log of dollar amount of the exemption) indicate that consumers are less likely to file for Chapter 13 (rather opting for Chapter 7 filing) for states with larger homestead exemption, as expected. The coefficients of the district court fixed effects are not reported in the tables, but they are mostly significant, confirming a filing-chapter bias at the district court level.[22]

In the second stage, we examine the differences in credit access for Chapter 7 versus Chapter 13 filers during the period up to six quarters following the filing date (and six quarters following the discharge date in a separate analysis). Particularly, we examine the following factors in Stage 2 of our analysis: the probability of getting new credit cards, the total number of credit cards in possession (including both newly obtained cards and old cards from before bankruptcy filing), and the total amount of credit limit (combined credit limit amount of all cards in possession regardless of whether old or new cards).[23]

[22] Specifically, of the 90 district court control factors, 75 are significant at the 1 percent level, and three are significant at the 5 percent level leaving 12 being insignificantly different from zero.

[23] We use Stata IVProbit command for the analysis of the probability of getting new cards, where the first stage is a linear regression, and the second stage is a probit regression. We use IVRegress command for the analysis of the number of cards and the amount of credit limit, where linear regression is used in both stages 1 and 2. We discuss the robustness of our results compared with other estimation techniques in the online appendix.

Probability of Getting New Cards After Bankruptcy Filing and After Discharge*:* We report our results on the probability of receiving a new credit card two quarters, four quarters, and six quarters after the bankruptcy filing (Table 3 column 1) and after the bankruptcy discharge (Table 3A column 1 in the appendix), respectively. The dependent variable takes a value of one if the filer has received a new credit card after the bankruptcy event (filing in Table 3A and discharge in Table 3B) in the second stage. The dependent variable determined in Stage 1 of the analysis (the indicator variable that takes the value of one if the debtor chooses to file for bankruptcy under Chapter 13 and zero if the consumer chooses to file for bankruptcy under Chapter 7) is utilized as one of the explanatory variables in Stage 2 of the analysis.[24] We control for the various risk characteristics, including whether there has been a credit inquiry within the past six months; the number of new cards opened in the last six months; the changes in credit limit from two quarters before the bankruptcy event date; the credit utilization rate (combined credit card balance over total credit limit); the Equifax risk score as of six months before filing; and a few dummy indicators for whether the borrower has at least one card, has a first mortgage before filing, is younger than 25, is between 25 and 45 years old, and whether the borrower is 60 days or more delinquent on the first mortgage, auto loan, or credit card. Explanatory variables are as of two quarters prior to the observation date unless stated otherwise. Additionally, we also include changes in county unemployment rates and dummy variables to indicate the time periods (postreform but before crisis, crisis, or postcrisis) of the event dates (filing or discharge dates).

[24] Each bankruptcy filer enters the regression three times: one for each of the two-quarter intervals following the bankruptcy filing date, where the three two-quarter intervals are Q1-Q2, Q3-Q4, and Q5-Q6. The dummy variables Q3_Q4 following bankruptcy date and Q5_Q6 following bankruptcy date are equal to one for observations in Q3-Q4 and Q5-Q6 periods, respectively, and equal to zero otherwise. The base case is for observations in Q1-Q2 period, where both of the dummy variables take the value of zero.

After Filing: From Table 3, results from the first-stage analysis, the positive and significant coefficients of the dummy indicators for the periods postreform, crisis, and postcrisis suggest that relative to the prebankruptcy reform period, debtors are much more likely to file under Chapter 13 in all later periods. This reflects the effects of two factors, the new bankruptcy law that made filing under Chapter 7 much harder and the mortgage crisis that put many homeowners underwater with their mortgages. As previous research has found (see summaries in the introduction), homeowners are more likely to file for bankruptcy under Chapter 13, especially when they intend to save the house. The significantly negative coefficient of changes in unemployment rate indicates that an increase in county unemployment rates increases the probability of filing for Chapter 7 (over Chapter 13), consistent with earlier findings. In addition, debtors with more credit cards who submitted credit applications shortly and received new credit cards before the filing date are more likely to file under Chapter 7. While changes in credit limits do not impact the chapter choice decision significantly, high credit card utilization rates also make debtors more likely to file under Chapter 7. High-risk score borrowers also file more often under Chapter 7 than Chapter 13. Debtors with credit card debt and who are delinquent on their credit card debt are also more likely to file under Chapter 7. By contrast, debtors with first mortgages and those who are delinquent on secured loans, auto loans, and mortgages are more likely to file under Chapter 13. Older households are also more likely to file under Chapter 13. Finally, consistent with the literature, more generous homestead exemptions encourage Chapter 7 filing over Chapter 13.

Results from the second-stage analysis in Table 3 column 1 indicate that the key variable of interest — the variable D_Filed for Chapter 13 — is significantly negative, indicating that

Chapter 13 filers are less likely to get a new credit card compared with Chapter 7 filers.[25] For other control variables, compared with the prereform period, debtors are more likely to receive credit cards during the postreform precrisis and postcrisis periods but less likely during the crisis period. The former result may reflect the fact that bankruptcy law was substantially tightened after the reform. Consequently, lenders were more willing to lend to those bankrupt households who were less likely to be strategic filers. Not surprisingly, during the crisis, bankrupt households found it harder to get new credit. Other control factors — increases in local unemployment rates, increases in credit limit from six months ago, having first mortgages before filing, being young, and being delinquent on secured debt all reduce the probability of getting new credit cards. Credit application submissions, the number of credit cards, the risk score (indicators of better quality), a credit card before filing, and between 25 and 45 years of age are all factors that contribute to debtors more likely to receive new credit cards. Finally, debtors were also more likely to receive new cards as time elapsed since their filing, as indicated by the significantly positive coefficients of the dummy indicators for three to four and five to six quarters (relative to the base case of one to two quarters) after filing.

After Discharge: Turning to analysis on the probability of getting new cards after discharge is reported in Table 3A column 1. In the second stage, Chapter 13 filers are still less likely to receive credit cards than Chapter 7 filers after the discharge, but the difference is smaller than after filing.[26] In terms of other control variables, credit utilization rate slightly increases the probability of getting new cards. Debtors are not more likely to get new cards if

[25] Using Stata margins command, we find that Chapter 13 filers are 74 percent less likely to get new cards than Chapter 7 filers after filing.
[26] The marginal reduction in probability of getting new cards for Chapter 13 filers after discharge is 60 percent.

discharged in the postcrisis period than in the precrisis and prereform period. Five to six quarters after discharge, interestingly, debtors are less likely to receive new cards. The other variables all have the same sign and similar magnitude as those in the after-filing analysis.

Total Number of Cards (New and Old) After Filing and After Discharge*:* We perform a similar two-stage regression analysis as noted earlier but with OLS regression (instead of Probit) in the second stage here to determine whether the number of credit cards that Chapter 13 filers have as of two quarters, four quarters, and six quarters after bankruptcy filing and discharge dates, is less than the total number of credit cards that Chapter 7 filers have. The first-stage chapter choice results are almost identical to the previous analysis, which have been described earlier.

The second stage results reported in column 2 of Tables 3 (after filing) and 3A (after discharge) indicate that Chapter 13 filers have fewer credit cards in total than Chapter 7 filers do for both after filing and after discharge. The other explanatory variables have mostly the same signs as they have in the previous regressions with only a few exceptions. After filing, a higher credit utilization rate prior to the filing decreases the number of total cards after filing. Those who are delinquent on their secured loans have fewer cards in total. These fewer numbers of cards seem to be related to being less creditworthy due to high credit utilization or delinquency status on other financial products. After discharge date, while Chapter 13 filers still have fewer credit cards than Chapter 7 filers, the difference in the number of cards is much smaller than that of after filing, only 0.50 as opposed to 2.5.

Total Amount of Credit Limit after Filing and After Discharge*:* We examine total dollar amount of credit limits that Chapter 13 filers have on average, relative to that of Chapter 7

filers. The results are presented in column 3 of Table 3 and Table 3A for after filing and after discharge, respectively. The dependent variable in column 3 is the total dollar amount of credit limit as of the observation date — two, four, or six quarters following the filing (or discharge) date.

The first-stage results are close to those reported in columns 1 and 2 for the most part.[27] For the second stage, the coefficient of the Chapter 13 filing indicator is positive and significant at the 1 percent level. The results indicate that total credit limit for Chapter 13 filers is about $591 more on average than that of Chapter 7 filers after filing and $218 more after discharge.[28]

To summarize, our results suggest that while new lenders are less willing to issue credit cards to Chapter 13 filers (relative to Chapter 7 filers), the overall credit limit is somewhat higher for Chapter 13 filers. This finding together with our descriptive statistics in Table 2 suggests that the higher credit limits for Chapter 13 filers come mostly from the existing lenders and/or old credit card accounts. New lenders are more willing to extend new credit to Chapter 7 filers than to Chapter 13 filers due to their improved balance sheet and greater demand for credit after filing. Chapter 13 filers are better able to hold on to their old credits but being viewed less favorably by new lenders — the net effect results in less of a chance of Chapter 13 filers able get new credit cards but somewhat larger overall credit limit available to them compared with Chapter 7 filers, on average.

[27] A few variables changed signs. For example, filers who have mortgages before filing and are delinquent on auto loans have lower credit limits. Filers between the ages of 25 and 45 get higher credit limit than older filers.

[28] In terms of the other variables, for the after filing analysis, credit limits are consistently lower after the reform. Increasing unemployment rates, having a high credit utilization ratio, and being young all reduce the credit limit, while having submitted credit application, getting a new card, and having higher risk score all raise the credit limit. For the after-discharge analysis, the only difference is that that having credit card before discharge reduces the credit limit and as time elapses after discharge, the credit limit decreases.

5. Conclusion

In this paper, we study postbankruptcy credit access across filing types and filing periods. Our unique account-level credit bureau data allow us to study several new dimensions in this area of consumer finance that have not been previously examined. In particular, we are able to analyze Chapter 7 filers and Chapter 13 filers separately, evaluate credit access around the filing date versus discharge date independently, identify supply and demand factors, and isolate new accounts from old credit accounts.

We find that although credit scores start to recover immediately after the bankruptcy filing and are (for most filing periods) back to their prebankruptcy level about six quarters after the filing, filers have much reduced access to the credit market. This reduced access reflects a reduced credit supply since lenders substantially cut the credit limits they offer to filers after a bankruptcy filing; this is particularly true for Chapter 7 filers. Chapter 13 filers are able to keep more of their old credit from before bankruptcy filing. However, we also find that new lenders treat Chapter 13 filers less favorably than Chapter 7 filers. Chapter 13 filers are much less likely to receive new credit cards than Chapter 7 filers after bankruptcy filing and after discharge, even after we control for borrower characteristics and economic environment. Overall, Chapter 13 filers end up with a slightly higher credit limit amount on average than Chapter 7 filers — both after the filing and after discharge.

Our results have several important policy implications. First, while credit score is an important factor in evaluating consumers' access to credit, it is not sufficient. A good credit risk model or credit access model needs to incorporate several other control factors at a granular

level. Second, in contrast to previous findings in the literature, we find that bankruptcy filers suffer a significant reduction in their overall credit access regardless of whether they file for Chapter 7 or Chapter 13 and that the impact seems to be long-lasting, up to five years or even longer for Chapter 13 filers.

References

Braucher, Jean (1993). "Lawyers and Consumer Bankruptcy: One Code, Many Cultures." *American Bankruptcy Law Journal* 67(4), pp. 501–583.

Braucher, Jean, Dov Cohen, and Robert Lawless (2012). "Race, Attorney Influence, and Bankruptcy Chapter Choice." *Journal of Empirical Legal Studies*, pp. 393–429.

Brown, M., A. Haughwout, D. Lee, and W. van der Klaauw (2011). "Do We Know What We Owe? A Comparison of Borrower- and Lender-Reported Consumer Debt," Federal Reserve Bank of New York Staff Report No. 523.

Cohen-Cole, Ethan, Burcu Duygan-Bump, and Judit Montoriol-Garriga (2013). "Forgive and Forget? Who Gets Credit after Bankruptcy and Why?" *Journal of Banking and Finance* 37(12), pp. 5101–5117.

Domowitz, Ian and Robert L. Sartain (1999). "Determinants of the Consumer Bankruptcy Decision," *The Journal of Finance* 54, pp. 403–422.

Elias, Stephen (2006). "The New Bankruptcy: Will It Work for You?" Berkeley: Nolo Press.

Eraslan, Hulya, Gizem Kosar, Wenli Li, and Pierre D. Sarte (2014). "The Anatomy of US Personal bankruptcy under Chapter 13," manuscript.

Han, Song and Geng Li (2011). "Household Borrowing after Personal Bankruptcy," *Journal of Money, Credit, and Banking* 43(2-3), pp. 491–517.

Han, Song, Benjamin J. Keys, and Geng Li (2011). "Credit Supply to Personal Bankruptcy Filers: Evidence from Credit Card Mailings," Federal Reserve Board, Finance and Economics Discussion Series: Working Paper 2011-29 (May).

Jagtiani, Julapa and William W. Lang (2011). "Strategic Defaults on First and Second Lien Mortgages During the Financial Crisis," *Journal of Fixed Income* 20 (4), pp. 7–23.

Jimenez, Dalie (2009). "The Distribution of Assets in Consumer Chapter 7 Bankruptcy Cases," 83 *American Bankruptcy Law Journal*, pp. 795–821.

Lefgren, Lars, Frank L. McIntyre, and Michelle Miller (2013). "Chapter 7 or 13: Are Client or Lawyer Interests Paramount?" *The B.E. Journal of Economic Analysis & Policy Advances* 10 (1).

McIntyre, Douglas A. (2011). "10 Signs the Double Dip Recession Has Begun," NBC News http://www.nbcnews.com/id/43946055/ns/business-us_business/t/signs-double-dip-recession-has-begun/.

Musto, David K. (2004). "What Happens When Information Leaves a Market? Evidence from Post-Bankruptcy Consumers," *Journal of Business* 77(4), pp. 725–748.

Nelson, Jon P. (1999). "Consumer Bankruptcy and Chapter Choice: State Panel Evidence," *Contemporary Economic Policy* 17, pp. 552–566.

Norberg, Scott and Andrew Velkey (2007). "Debtor Discharge and Creditor Repayment in Chapter 13," *Creighton Law Review* 39(3), pp. 473–560.

Porter, Katherine (2008). "Bankrupt Profits: The Credit Industry's Business Model for Post-Bankruptcy Lending," *Iowa Law Review* 94, pp. 1369–1421.

Porter, Katherine (2010). "Life after Debt: Understanding the Credit Restraint of Bankruptcy Debtors," *American Bankruptcy Institute Law Review* 18(1), pp. 1–42.

Staten, Michael (1993). "The Impact of Post-Bankruptcy Credit on the Number of Personal Bankruptcies," Credit Research Center, Purdue University, Krannert Graduate School of Management Working Paper 58.

Stavins, Joanna (2000). "Credit Card Borrowing, Delinquency, and Bankruptcy," *New England Economic Review*, July/August, pp. 15–21.

Wardrip, Keith and Robert M. Hunt (2013). "Residential Migration, Entry, and Exit as Seen Through the Lens of Credit Bureau Data," Discussion Paper of Payment Cards Center, Federal Reserve Bank of Philadelphia.

Whitford, William C. (1994). "The Ideal of Individualized Justice: Consumer Bankruptcy as Consumer Protection, and Consumer Protection in Consumer Bankruptcy,"68 *American Bankruptcy Law Journal*, pp. 397–417.

Table 1: Summary Statistics of Bankruptcy Filers (as of Filing and Discharge Quarters)

Variable	Chapter 7 Filers				Chapter 13 Filers			
	At Filing		At Discharge		At Filing		At Discharge	
Statistic	Mean	STD	Mean	STD	Mean	STD	Mean	STD
Filing/Discharge: 2002:Q1-2005:Q3								
Filing Age	43.1	13.5	43.9	13.4	44.9	12.0	47.4	11.8
Risk Score	518.4	99.0	579.9	52.2	514.6	93.4	584.9	62.3
Has Credit Card Debt (%)	83.4	37.2	67.1	47.0	77.0	42.1	62.7	48.4
Has Auto Loans (%)	44.9	49.7	35.2	47.8	50.0	50.0	30.1	45.9
Has First Mortgages (%)	30.9	46.2	19.8	39.9	45.8	49.8	36.4	48.1
Credit Card 60+ Days Past Due (%)	51.6	50.0	16.5	37.1	43.3	49.5	17.3	37.9
Auto Loans 60+ Days Past Due (%)	7.9	27.0	4.9	21.5	7.7	26.6	4.2	20.1
First Mortgages 60+ Days Past Due	5.2	22.2	2.9	16.8	15.7	36.3	3.8	19.0
Number of Filers	279,328		192,717		45,649		2,104	
Filing/Discharge: 2005:Q4-2007:Q2								
Filing Age	43.7	13.7	44.7	13.6	46.0	12.2	48.5	11.8
Risk Score	528.9	95.1	589.8	54.9	520.9	94.5	596.9	62.3
Has Credit Card Debt (%)	80.1	39.9	50.9	50.0	77.8	41.6	58.9	48.4
Has Auto Loans (%)	45.5	49.8	37.9	48.5	56.2	49.6	33.3	45.9
Has First Mortgages (%)	30.0	45.8	18.8	39.0	50.7	50.0	35.5	48.1
Credit Card 60+ Days Past Due (%)	53.5	49.9	12.3	32.8	45.4	49.8	12.0	37.9
Auto Loans 60+ Days Past Due (%)	9.8	29.7	3.8	19.1	9.7	29.6	2.5	20.1
First Mortgages 60+ Days Past Due	6.4	24.6	2.2	14.7	18.2	38.6	2.2	19.0
Number of Filers	68,419		130,756		14,456		13,310	
Filing/Discharge: 2007:Q3-2009:Q4								
Filing Age	45.2	13.3	45.9	13.6	46.4	11.8	49.6	12.1
Risk Score	524.9	93.4	610.6	46.4	523.0	99.3	600.9	65.4
Has Credit Card Debt (%)	85.2	39.7	40.1	49.0	80.0	40.0	45.8	49.8
Has Auto Loans (%)	53.2	50.0	38.5	48.7	61.2	48.7	32.5	46.8
Has First Mortgages (%)	47.5	50.0	21.8	41.3	58.1	49.3	29.3	45.5
Credit Card 60+ Days Past Due (%)	53.9	49.7	2.7	16.2	44.8	49.7	8.2	27.5
Auto Loans 60+ Days Past Due (%)	10.8	31.2	1.4	11.8	10.1	30.1	3.1	17.4
First Mortgages 60+ Days Past Due	17.3	39.8	1.1	10.5	21.1	40.8	3.3	17.8
Number of Filers	111,304		113,039		27,037		25,272	
Filing: 2010:Q1-2010:Q4 **Discharge: 2010:Q1-2012:Q2**								
Filing Age	46.6	13.3	47.2	13.2	47.6	11.7	50.6	12.2
Risk Score	538.2	94.7	620.3	40.4	535.2	90.2	610.8	60.0
Has Credit Card Debt (%)	80.4	38.5	37.5	48.4	72.4	44.7	35.1	47.7
Has Auto Loans (%)	48.4	50.0	36.3	48.1	57.9	49.4	31.1	46.3
Has First Mortgages (%)	48.4	50.0	25.1	43.4	59.4	49.1	26.8	44.3
Credit Card 60+ Days Past Due (%)	55.3	49.6	0.6	7.9	43.2	49.5	5.8	23.3
Auto Loans 60+ Days Past Due (%)	10.9	31.0	0.5	7.3	10.4	30.5	3.1	17.4
First Mortgages 60+ Days Past Due	19.8	40.3	0.2	4.9	26.4	44.1	3.7	18.8
Number of Filers	146,389		73,467		38,149		7,963	

Sources: Federal Reserve Bank of Philadelphia Equifax Consumer Credit Panel and Federal Reserve Bank of New York Consumer Credit Panel/Equifax

Table 2
Post-Bankruptcy Filing — Credit Access (Credit Cards)
By Filing Periods (Prereform, Precrisis, Crisis, Postcrisis)
Chapter 7 Versus Chapter 13

	Chapter 7 Filers				Chapter 13 Filers			
	At Filing	+2Q	+4Q	+6Q	At Filing	+2Q	+4Q	+6Q
Filing: 2002:Q1-2005:Q3								
# Filers with Cards	216,679	174,148	167,917	176,674	29,972	23,354	21,731	22,145
# of New Cards	1,018	22,503	86,483	171,612	170	1,637	4,463	8,896
# of Old Active Cards	1,078,550	465,807	263,744	197,856	151,679	81,220	48,235	39,183
New Credit Limit ($Mill)	1	14.7	59.2	144.3	0.2	1.3	3.1	6.3
Old Credit Limit ($ Mill)	3,597.5	1,287.9	909.7	611.5	485.8	205.5	140.6	110.2
Total Balance ($ Millions)	2,053.1	334.2	258.6	292	264.4	47.3	32.9	31
Filing: 2005:Q4-2007:Q2								
# Filers with Cards	43,671	31,490	36,719	37,648	8,847	5,782	5,643	5,511
# of New Cards	886	13,994	36,663	60,340	128	1,086	2,704	4,524
# of Old Active Cards	170,657	50,282	30,688	25,781	42,576	18,464	13,498	10,115
New Credit Limit ($Mill)	0.9	8.8	30.6	61.7	0.2	0.8	2.1	3.7
Old Credit Limit ($ Mill)	579.9	128	87.1	70.4	146.2	51.4	37.8	28.6
Total Balance ($ Millions)	286.2	49.8	60	65	62.9	8.5	7.1	7.1
Filing: 2007:Q3-2009:Q4								
# Filers with Cards	81,919	42,935	41,839	47,890	10,690	5,186	4,928	4,437
# of New Cards	450	11,195	32,101	52,974	93	1,058	2,288	3,699
# of Old Active Cards	411,498	105,031	42,855	39,892	94,412	34,560	22,160	18,162
New Credit Limit ($Mill)	0.5	7.9	26.1	45.4	0.2	0.9	1.8	2.6
Old Credit Limit ($ Mill)	1,864	226.8	97.4	73.1	418.6	107.6	68.2	50.2
Total Balance ($ Millions)	791.8	36.3	35.2	45.2	89.9	8.6	6.8	6.3
Filing: 2010:Q1-2010:Q4								
# Filers with Cards	97,753	55,754	62,577	71,148	2,113	978	998	1,048
# of New Cards	473	18,181	58,525	98,731	124	1,276	3,136	5,675
# of Old Active Cards	449,979	105,258	56,982	54,626	110,543	43,761	32,736	28,232
New Credit Limit ($Mill)	0.4	12.3	44.8	86.9	0.1	0.8	1.8	3.5
Old Credit Limit ($ Mill)	1,914.8	174.5	89.8	79.7	473.4	130.8	86.7	68.5
Total Balance ($ Millions)	835.3	30.9	43.1	64.5	19.1	2.8	2.3	2

Sources: Federal Reserve Bank of Philadelphia Equifax Consumer Credit Panel and Federal Reserve Bank of New York Consumer Credit Panel/Equifax

Table 3
Regression Results: Credit Access after Bankruptcy Filing
Chapter 13 Filers Versus Chapter 7 Filers

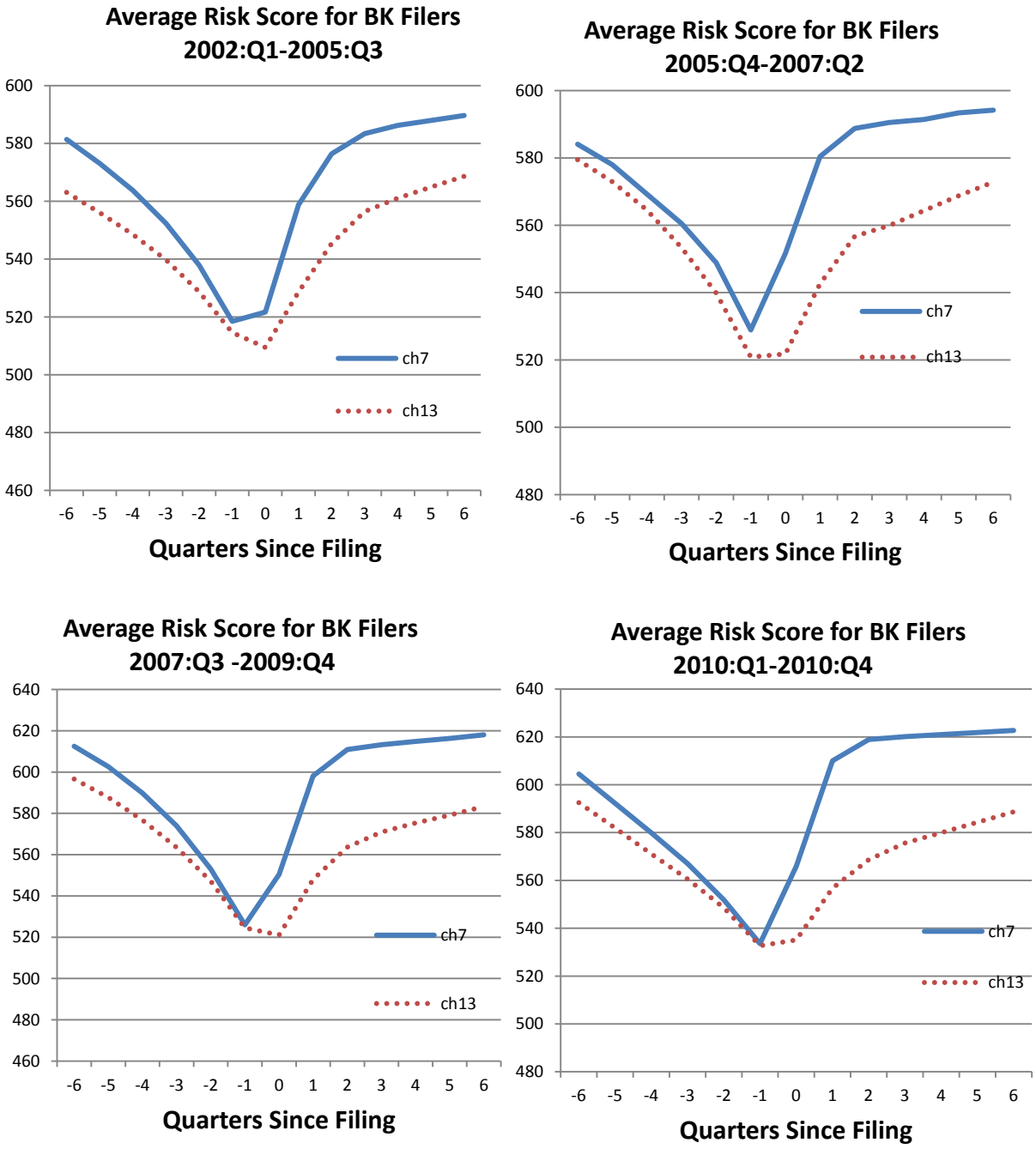
Independent Variables	(1) Dependent Variable = Prob. Getting New Cards		(2) Dependent Variable = Total Number of Cards		(3) Dependent Variable=Total $ Amount Credit Line	
	Coefficient Estimates	Standard Errors	Coefficient Estimates	Standard Errors	Coefficient Estimates	Standard Errors
First Stage:						
Instrumented var.= D_Filed for Chapter 13						
Intercept	0.8790***	0.0261	0.8629***	0.0094	0.8521***	0.0093
D_Post-Reform Pre-Crisis (2005:Q3-2007:Q2)	0.0460***	0.0173	0.0437***	0.0009	0.0429***	0.0009
D_Crisis (2007:Q3-2009:Q4)	0.0750***	0.0046	0.0728***	0.001	0.0697***	0.001
D_Post-Crisis (2010:Q1-2010:Q4)	0.0832***	0.0052	0.0804***	0.0009	0.0757***	0.0009
Changes in Unemployment (-6Q to -2Q)	-0.0023***	0.0046	-0.0017***	0.0002	-0.0020***	0.0002
D_Submitted Credit Apps. in the Last 2Qs	-0.0834***	0.0013	-0.0892***	0.0006	-0.0816***	0.0006
Number of Cards as of the Last 2 Quarters	-0.0104***	0.0038	-0.0135***	0.0002	-0.0104***	0.0002
Change in Credit Limit from -2Q (< filing)	0.0000	0.0012	0.0001**	0.0000	-0.0301***	0.001
Credit Utilization Ratio	-0.0279***	0.0008	-0.0193***	0.001	-0.0011***	0.0000
Risk Score as of 2Q Before Filing	-0.0012***	0.0056	-0.0012***	0.0000	-0.0296***	0.0007
D_Has Credit Card Before Filing	-0.0282***	0.0000	*(omitted)*	--	0.0113***	0.0008
D_Has 1st Mortgage Before Filing	0.0119***	0.0043	0.0116***	0.0008	-0.0899***	0.0012
D_Less Than 25 Years Old	-0.0908***	0.0045	-0.0864***	0.0012	-0.0444***	0.0006
D_Between 25 and 45 Years Old	-0.0448***	0.0081	-0.0442***	0.0006	0.0531***	0.0017
D_60+ Days Delinquent on 1st Mortgage	0.0502***	0.0033	0.0498***	0.0017	0.0324***	0.0013
D_60+ Days Delinquent on Auto Loans	0.0313***	0.0084	0.0325***	0.0013	-0.0185***	0.001
D_60+ Days Delinquent on Cards	-0.0261***	0.0066	-0.0411***	0.0009	0.0370***	0.0007
D_3 to 4 Quarters After Filing	0.0409***	0.0054	0.0372***	0.0008	0.0463***	0.0008
D_5 to 6 Quarters After Filing	0.0503***	0.0041	0.0448***	0.0008	-0.0560***	0.0007
Homestead Exemption	-0.0056***	0.0042	-0.0053***	0.0007	-0.0053***	0.0007
Court Districts 1-91 (not reported)						
Second Stage						
Intercept	-2.0849***	0.0261	-0.6010***	0.0108	-4,386***	62.1282
D_Filed for Chapter 13	-0.7434***	0.0173	-0.1813***	0.0071	590.60***	37.6205
D_Post-Reform Pre-Crisis (2005:Q3-2007:Q2)	0.1178***	0.0046	0.0485***	0.0023	-99.02***	10.1789
D_Crisis (2007:Q3-2009:Q4)	-0.0285***	0.0052	-0.2041***	0.0021	-570.40***	10.2118
D_Post-Crisis (2010:Q1-2010:Q4)	0.0220***	0.0046	-0.1918***	0.0018	-708.00***	9.4228
Changes in Unemployment (from -6Q to -2Q)	-0.0264***	0.0013	-0.0178***	0.0005	-37.88***	2.5968

D_Submitted Credit Applications in the Last 2Q	0.6937***	0.0038	0.2750***	0.0014	119.91***	7.7689
Number of Cards as of the Last 2 Quarters	0.0414***	0.0012	0.2774***	0.001	547.51***	5.5717
Change in Credit Limit from -2Q (< filing)/already has a new card (for limit regression)	-0.0045***	0.0008	-0.0002*	0.0001	686.99***	11.3707
Credit Utilization Ratio	0.0015	0.0056	-0.3618***	0.0029	-1,360***	17.1053
Risk Score as of 2Q Before Filing	0.0006***	0.0000	0.0014***	0.0000	9.1856***	0.0936
D_Has Credit Card Before Filing	0.1585***	0.0043	*(omitted)*		934.48***	11.5932
D_Has 1st Mortgage Before Filing	-0.0707***	0.0045	-0.0701***	0.0021	209.38***	12.2278
D_Less Than 25 Years Old	-0.2129***	0.0081	-0.1167***	0.0027	-163.93***	9.9076
D_Between 25 and 45 Years Old	0.0516***	0.0033	0.0207***	0.0014	-93.97***	6.9789
D_60+ Days Delinquent on 1st Mortgage	-0.0095	0.0084	0.0703***	0.0034	175.36***	20.1239
D_60+ Days Delinquent on Auto Loans	-0.0514***	0.0066	0.0246***	0.0025	179.22***	10.7302
D_60+ Days Delinquent on Cards	-0.1073***	0.0054	0.1801***	0.0026	954.71***	17.9862
D_3 to 4 Quarters After BK Filing	0.0987***	0.0041	0.4051***	0.0017	512.83***	9.6947
D_5 to 6 Quarters After BK Filing	0.1080***	0.0042	0.5815***	0.0019	511.58***	9.7848
R-Square	--		30.06%		10.74%	
Number of Observations	1,445,771		1,607,240		1,646,279	
Number of Filers	590,513		590,513		590,513	

Sources: Federal Reserve Bank of Philadelphia Equifax Consumer Credit Panel and Federal Reserve Bank of New York Consumer Credit Panel/Equifax

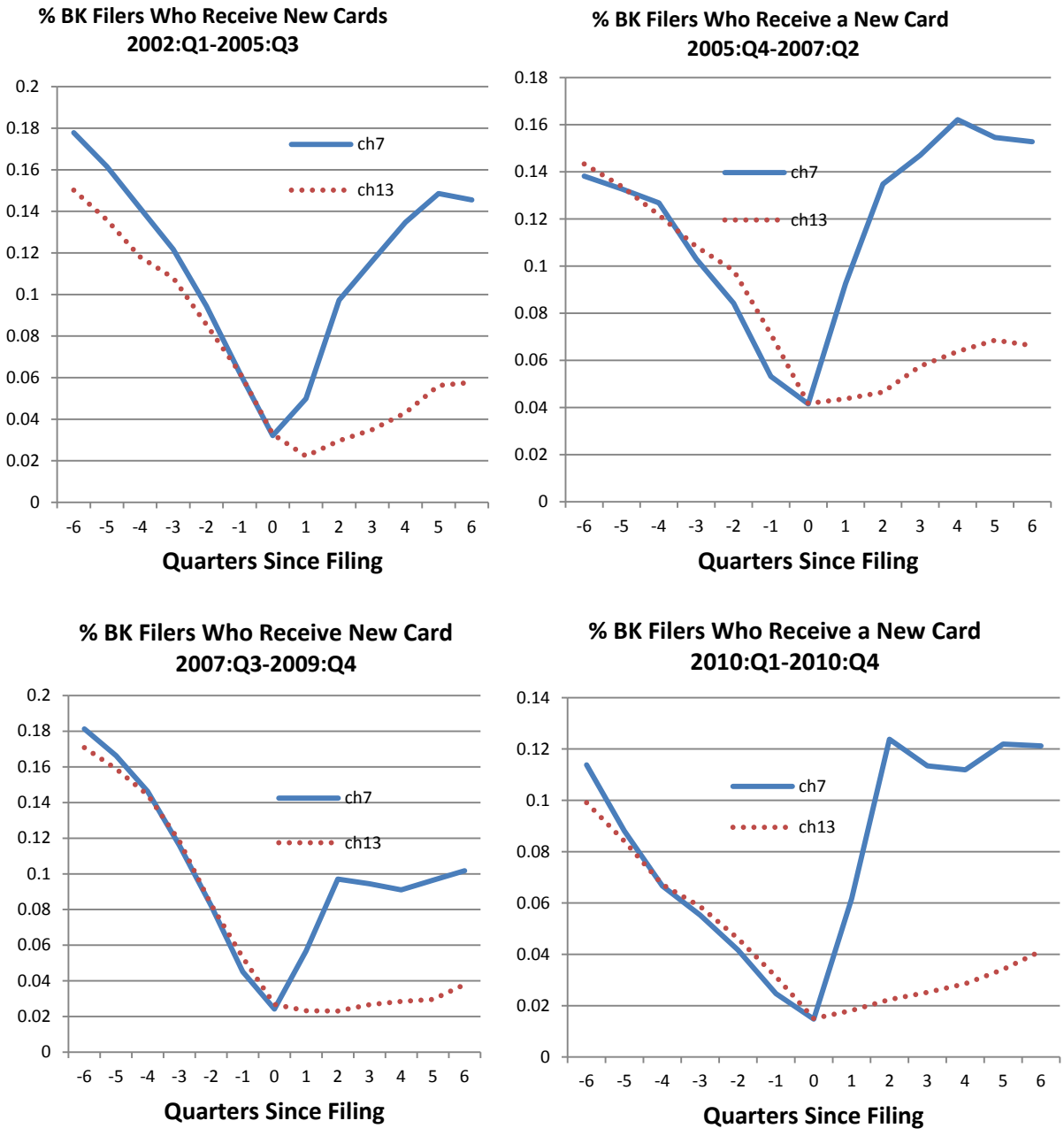
Note: @ Includes credits outside of bankruptcy only; ***, **, and * represent significance at the 1 percent, 5 percent, and 10 percent level, respectively.

Figure 1: Credit Score Before and After Bankruptcy Filing



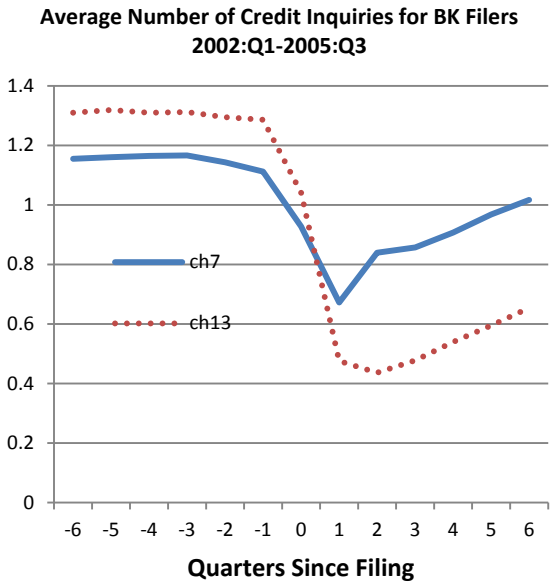
Sources: Federal Reserve Bank of Philadelphia Equifax Consumer Credit Panel and Federal Reserve Bank of New York Consumer Credit Panel/ Equifax

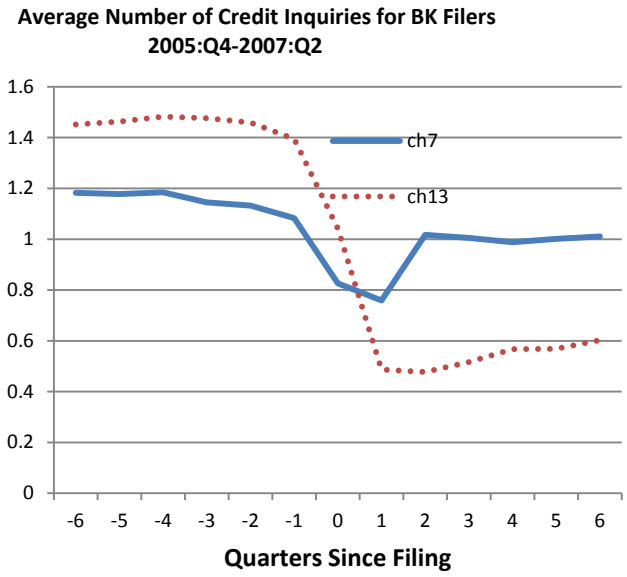
Figure 2: New Credit Cards Before and After Filing

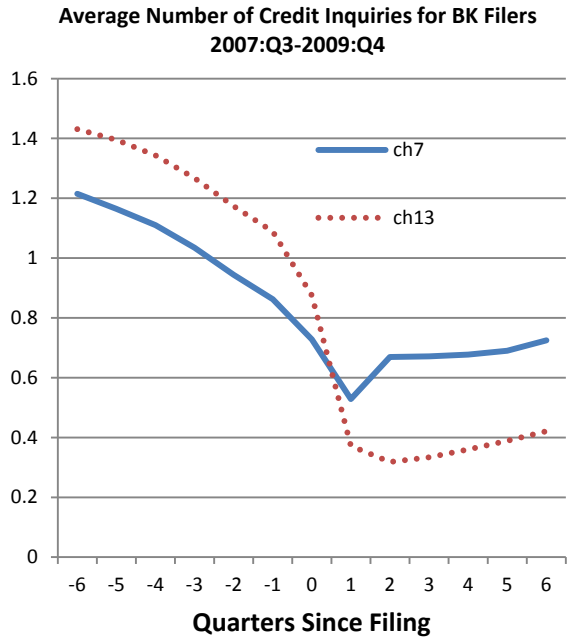


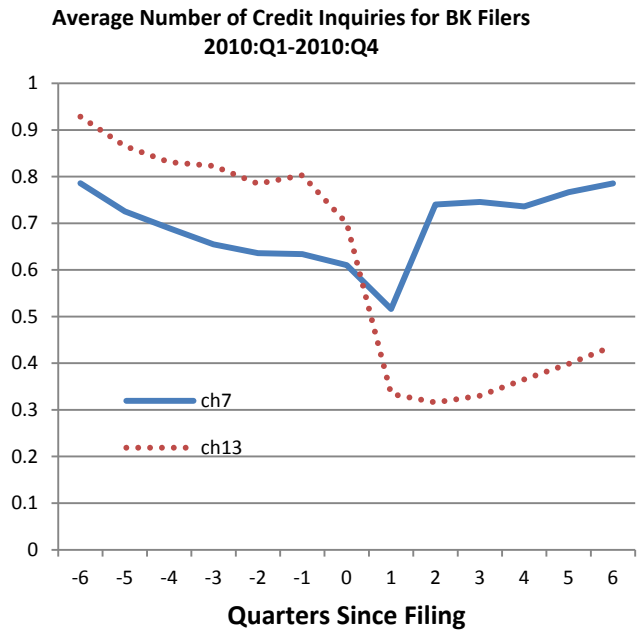
Sources: Federal Reserve Bank of Philadelphia Equifax Consumer Credit Panel and Federal Reserve Bank of New York Consumer Credit Panel/Equifax

Figure 3: Demand for Credit (Credit Inquiries) Before and After Bankruptcy Filing



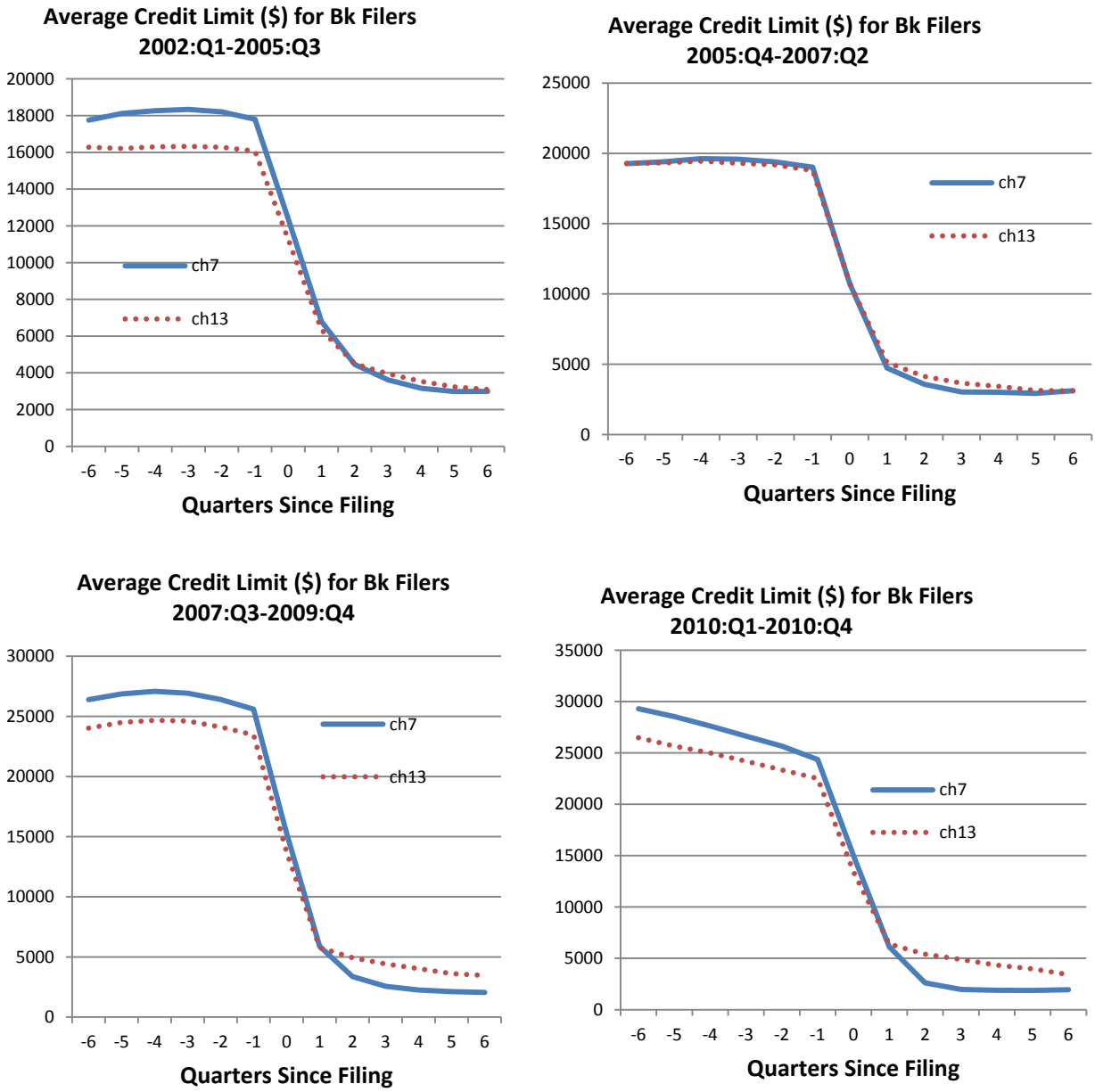






Sources: Federal Reserve Bank of Philadelphia Equifax Consumer Credit Panel and Federal Reserve Bank of New York Consumer Credit Panel/Equifax

Figure 4: Total Credit Limit Before and After Bankruptcy Filing



Sources: Federal Reserve Bank of Philadelphia Equifax Consumer Credit Panel and Federal Reserve Bank of New York Consumer Credit Panel/Equifax

APPENDIX I: Analysis Around Discharge Date

Table 2A
Postbankruptcy Discharge — Credit Access (Credit Cards)
By Filing Periods (Prereform, Precrisis, Crisis, Postcrisis)
Chapter 7 Versus Chapter 13

	Chapter 7 Filers				Chapter 13 Filers			
	As of Discharge	+2Q	+4Q	+6Q	As of Discharge	+2Q	+4Q	+6Q
Discharge: 2002:Q1-2005:Q3								
# Filers with Cards	151,782	136,991	138,582	143,398	1,842	1,802	1,865	1,969
# of New Cards	4,230	44,511	107,556	172,420	77	806	1,666	2,430
# of Old Active Cards	476,069	231,814	176,989	124,554	3,083	2,534	2,166	1,905
New Credit Limit ($Mill)	1.9	26.9	82.3	166.6	0	0.8	1.9	3
Old Credit Limit ($ Mill)	1,210.9	782.6	547	305.4	5.7	4.2	3.6	3.2
Total Balance ($ Millions)	401	218.3	218.7	265.2	3	3.1	3.5	4
Discharge: 2005:Q4-2007:Q2								
# Filers with Cards	57,448	55,470	63,929	65,566	6,967	7,243	7,409	7,406
# of New Cards	4,349	35,551	72,309	106,462	623	4,346	8,259	11,085
# of Old Active Cards	161,491	78,529	66,662	56,953	11,776	10,559	9,399	8,453
New Credit Limit ($Mill)	3.6	29.4	74.3	127.3	0.8	5.4	11.2	16.2
Old Credit Limit ($ Mill)	364.5	178.4	148.2	126.3	16.4	15.3	15.1	14.2
Total Balance ($ Millions)	119.5	102.9	125.8	147.6	11.5	13	15.2	17.9
Discharge: 2007:Q3-2009:Q4								
# Filers with Cards	45,952	39,266	41,136	45,431	11,089	10,366	9,984	9,927
# of New Cards	2,637	22,353	40,614	58,391	677	5,054	8,850	12,026
# of Old Active Cards	155,112	47,582	39,849	37,690	23,579	21,675	19,736	18,239
New Credit Limit ($Mill)	1.8	18.9	37.7	55.6	0.8	5.3	9.9	13.7
Old Credit Limit ($ Mill)	356.7	107.1	78	65.4	36.3	32.9	30.1	27.6
Total Balance ($ Millions)	50.8	38	44.1	52.3	18.6	18.5	19.2	19.1
Discharge: 2010:Q1-2012:Q2								
# Filers with Cards	46,223	46,420	55,144	61,611	6,848	7,075	7,643	7,926
# of New Cards	3,195	29,199	60,111	92,126	617	4,441	8,738	11,384
# of Old Active Cards	153,397	49,384	49,350	47,412	15,984	14,876	13,995	11,873
New Credit Limit ($Mill)	2.1	20.5	48.5	83.5	0.5	3.9	8.2	11.2
Old Credit Limit ($ Mill)	312.3	71.4	66.1	64.3	20	18.3	17.3	15.1
Total Balance ($ Millions)	27.6	29	44.3	62.4	9	9.4	10.6	12.1

Sources: Federal Reserve Bank of Philadelphia Equifax Consumer Credit Panel and Federal Reserve Bank of New York Consumer Credit Panel/Equifax

Table 3A
Regression Results: Credit Access after Bankruptcy Discharge
Chapter 13 Filers Versus Chapter 7 Filers

This analysis includes all individuals who filed for bankruptcy during the period 2002:Q1-2010:Q4 and were discharged by 2012:Q2. Those Chapter 13 filers who were discharged after 2012:Q2 are not included in the analysis, as we would not have sufficient post-discharge data (six quarters following the discharge date) for them.

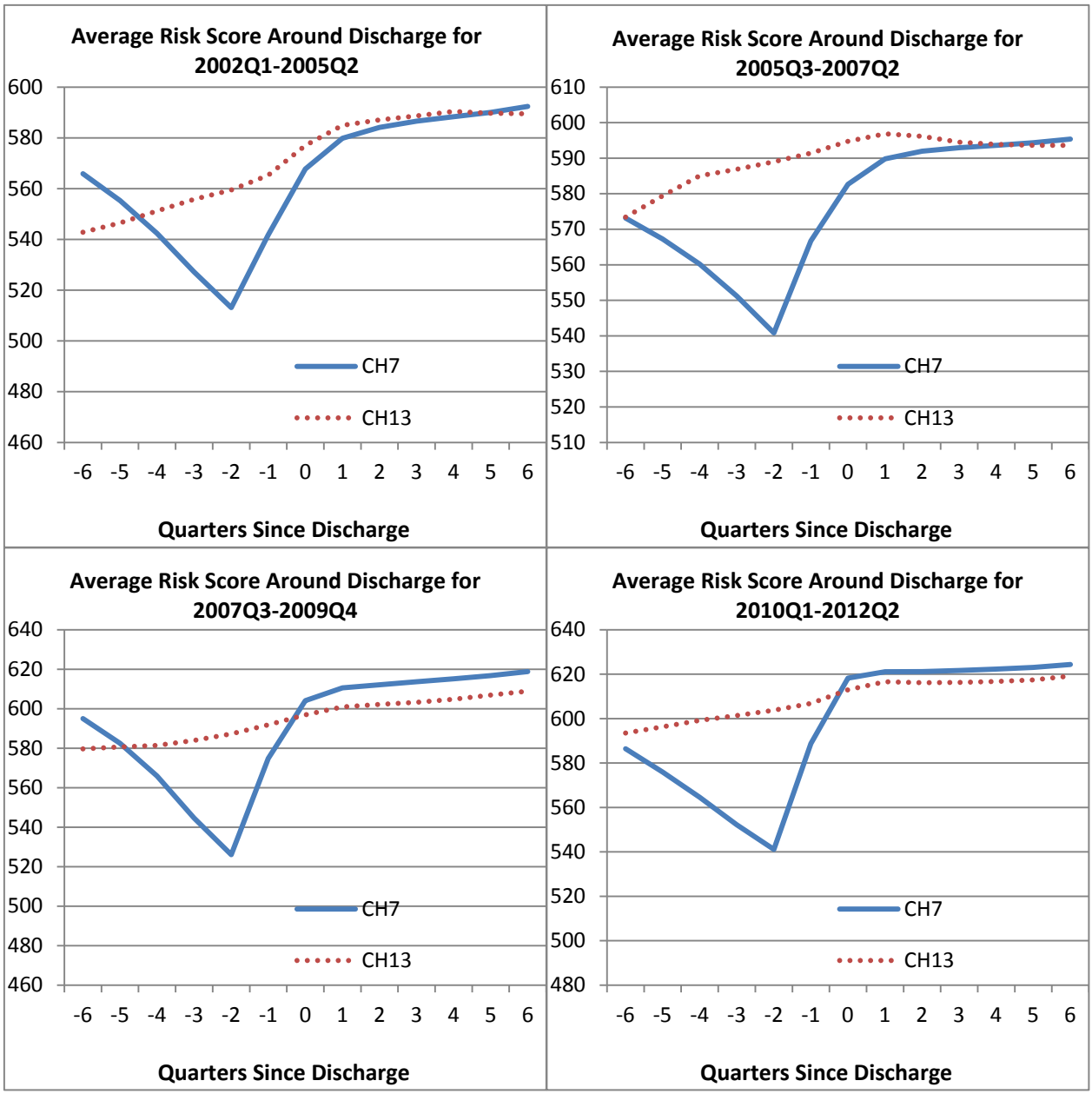
Independent Variables	(1) Dependent Variable = Prob. Getting New Cards		(2) Dependent Variable = Total Number of Cards		(3) Dependent Variable= Total $ Amount Credit Line	
	Coefficient Estimates	Standard Errors	Coefficient Estimates	Standard Errors	Coefficient Estimates	Standard Errors
First Stage: **Instrumented var.= D_Filed for Chapter 13**						
Intercept	-0.0974***	0.0082	-0.0923***	0.0071	-0.0867***	0.0071
D_Post-Reform Pre-Crisis (2005:Q3-2007:Q2)	0.0758***	0.0007	0.0740***	0.0006	0.0828***	0.0005
D_Crisis (2007:Q3-2009:Q4)	0.1768***	0.0008	0.1720***	0.0009	0.1802***	0.0009
D_Post-Crisis (2010:Q1-2010:Q4)	0.1427***	0.0007	0.1370***	0.0006	0.1452***	0.0006
Changes in Unemployment (-6Q to -2Q)	-0.0010***	0.0002	-0.0009***	0.0002	-0.0006***	0.0002
D_Submitted Credit Apps. in the Last 2Qs	0.0120***	0.0005	0.0079***	0.0004	0.0118***	0.0005
Number of Cards as of the Last 2 Quarters	0.0232***	0.0004	0.0156***	0.0003	0.0230***	0.0004
Change in Credit Limit from -2Q (< Discharge)	0.0249***	0.0003	0.0261***	0.0005	0.0301***	0.0009
Credit Utilization Ratio	0.0376***	0.001	0.0390***	0.0009	0.0001***	0.0000
Risk Score as of 2Q Before Discharge	0.0001***	0.0000	0.0001***	0.0000	-0.0097***	0.0008
D_Has Credit Card Before Discharge	-0.0223***	0.0008	*(omitted)*	--	0.0692***	0.0008
D_Has 1st Mortgage Before Discharge	0.0594***	0.0007	0.0617***	0.0008	0.0087***	0.001
D_Less Than 25 Years Old	0.0115***	0.0011	0.0081***	0.001	-0.0050***	0.0005
D_Between 25 and 45 Years Old	-0.0057***	0.0005	-0.0062***	0.0005	0.0288***	0.0021
D_60+ Days Delinquent on 1st Mortgage	0.0378***	0.0018	0.0318***	0.0021	0.0271***	0.0012
D_60+ Days Delinquent on Auto Loans	0.0272***	0.0013	0.0271***	0.0012	-0.0059***	0.0009
D_60+ Days Delinquent on Cards	-0.0044***	0.001	-0.0118***	0.0009	-0.0018***	0.0005
D_3 to 4 Quarters After BK Discharge	-0.0027***	0.0006	-0.0047***	0.0005	-0.0065***	0.0006
D_5 to 6 Quarters After BK Discharge	-0.0072***	0.0006	-0.0112***	0.0006	-0.0170***	0.0006
Homestead Exemption	-0.0051***	0.0006	-0.0050***	0.0005	-0.0045***	0.0005
Court Districts 1-91 (not reported)						

Second Stage						
Intercept	-2.4509***	0.0216	-0.6113***	0.0086	-5,666***	38.1331
D_Filed for Chapter 13	-0.5979***	0.0234	-0.2628***	0.0082	218.50***	33.4255
D_Post-Reform Pre-Crisis (2005:Q3-2007:Q2)	0.0687***	0.0044	0.0662***	0.0018	13.23*	7.7237
D_Crisis (2007:Q3-2009:Q4)	-0.0511***	0.0069	-0.0460***	0.0023	-453.54***	9.9711
D_Post-Crisis (2010:Q1-2010:Q4)	-0.0084	0.0053	-0.0407***	0.0018	-643.15***	7.6902
Changes in Unemployment (from -6Q to -2Q)	-0.0229***	0.0013	-0.0135***	0.0004	-15.07***	1.8446
D_Submitted Credit Apps. in the Last 2Q	0.8125***	0.0033	0.2968***	0.001	68.55***	4.9463
Number of Cards as of the Last 2 Quarters	0.0716***	0.0021	0.9448***	0.0012	1,581***	9.1454
Change in Credit Limit from -2Q (<Discharge) /whether have new card for credit limit regression	-0.0061***	0.0017	-0.0060***	0.0008	713.72***	7.8921
Credit Utilization Ratio	0.0735***	0.0061	0.1779***	0.0028	-1,210***	13.5043
Risk Score as of 2Q Before Discharge	0.0011***	0.0000	0.0009***	0.0000	11.55***	0.0607
D_Has Credit Card Before Discharge	0.1792***	0.0049			-134.63***	14.094
D_Has 1st Mortgage Before Discharge	-0.0431***	0.0049	-0.0292***	0.0019	276.05***	10.1987
D_Less Than 25 Years Old	-0.1983***	0.0078	-0.0580***	0.0022	-107.32***	6.2254
D_Between 25 and 45 Years Old	0.0499***	0.0031	0.0300***	0.0011	-50.39***	4.9589
D_60+ Days Delinquent on 1st Mortgage	-0.0269**	0.0122	0.0045	0.0045	334.29***	20.3757
D_60+ Days Delinquent on Auto Loans	-0.0790***	0.0086	-0.0275***	0.0032	203.20***	10.9444
D_60+ Days Delinquent on Cards	-0.1830***	0.0061	-0.5925***	0.0031	1,028.1***	15.7015
D_3 to 4 Quarters After BK Discharge	-0.0013	0.0036	0.0607***	0.0013	-62.37***	5.664
D_5 to 6 Quarters After BK Discharge	-0.0855***	0.0037	0.0545***	0.0014	-124.36***	5.9438
R-Square	--		68.30%		29.14%	
Number of Observations	1,424,465		1,611,973		1,727,023	
Number of Filers	567,750		567,750		567,750	

Sources: Federal Reserve Bank of Philadelphia Equifax Consumer Credit Panel and Federal Reserve Bank of New York Consumer Credit Panel/Equifax

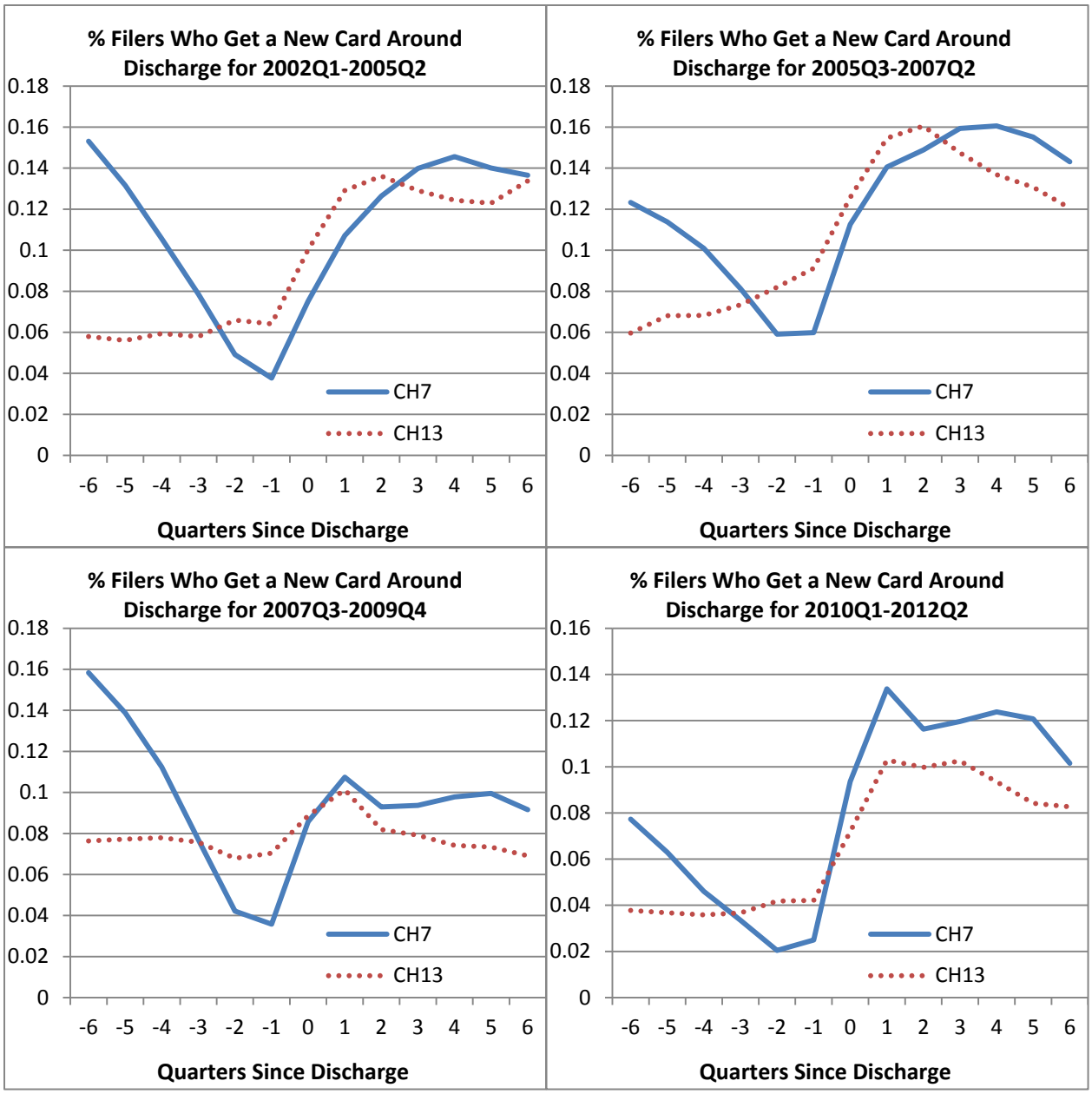
Note: @ Includes credits outside of bankruptcy only; ***, **, and * represent significance at the 1 percent, 5 percent, and 10 percent level, respectively.

Figure 1A: Credit Score Before and After Bankruptcy Discharge



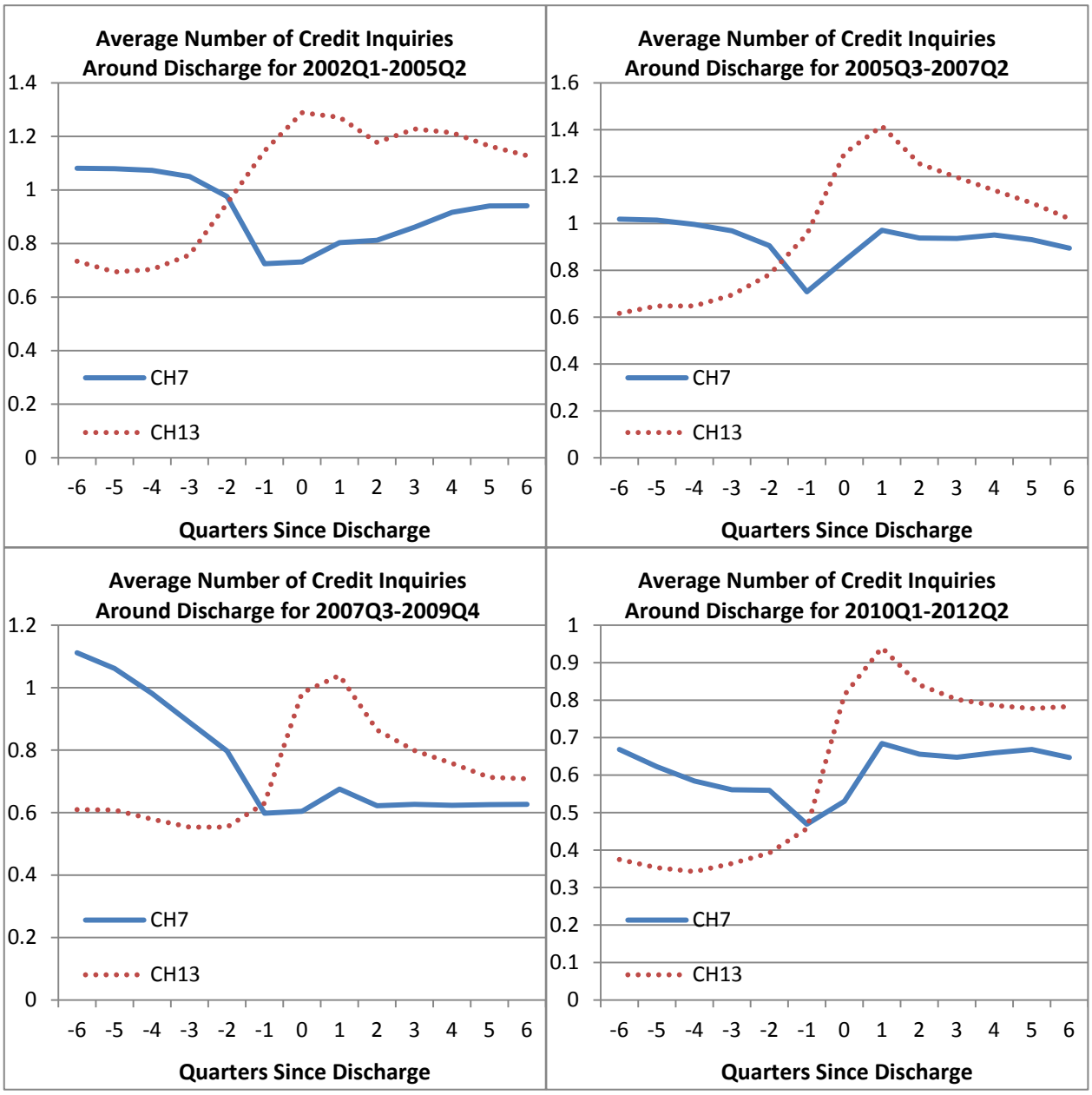
Sources: Federal Reserve Bank of Philadelphia Equifax Consumer Credit Panel and Federal Reserve Bank of New York Consumer Credit Panel/Equifax

Figure 2A: New Cards Before and After Discharge



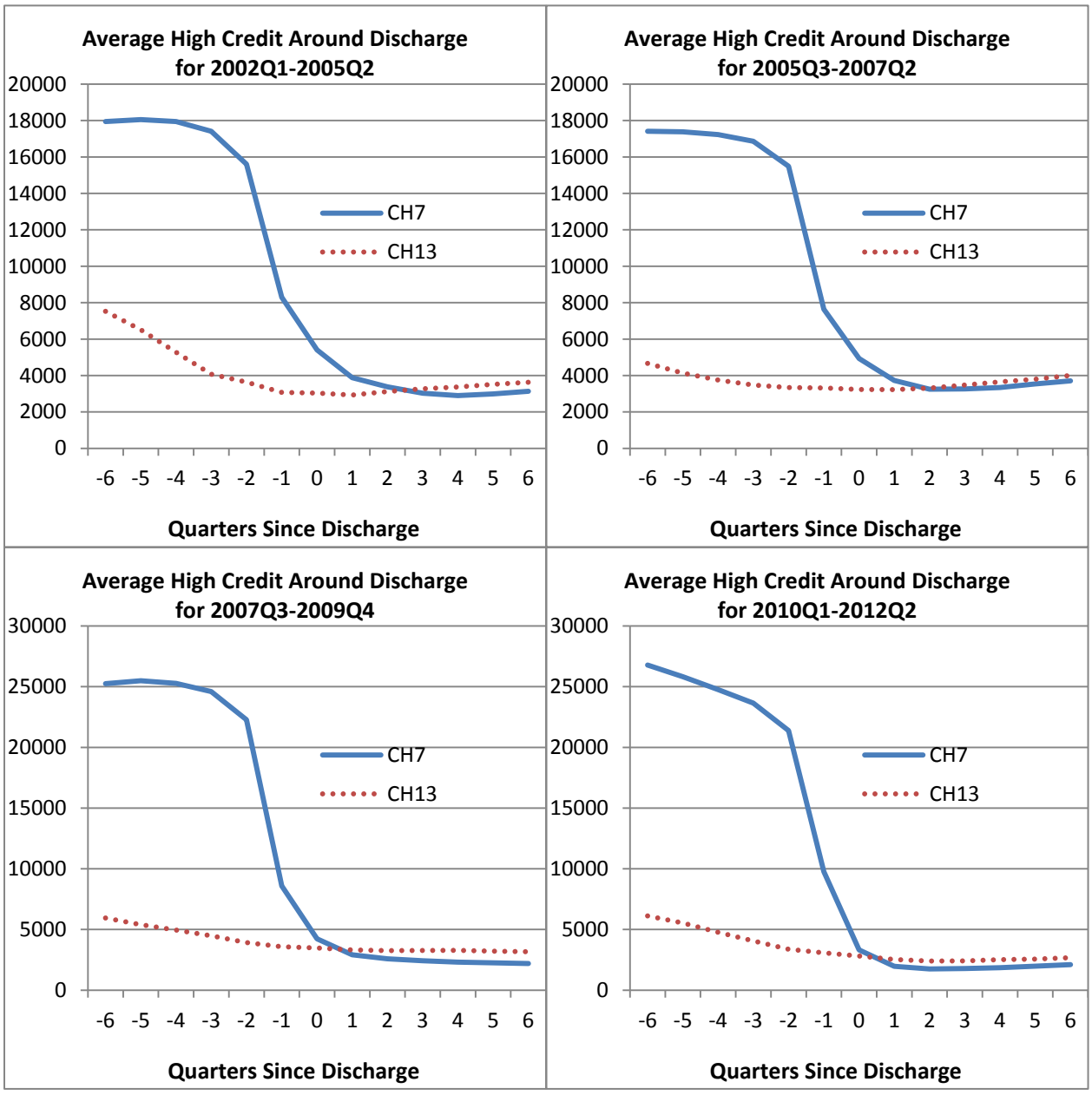
Sources: Federal Reserve Bank of Philadelphia Equifax Consumer Credit Panel and Federal Reserve Bank of New York Consumer Credit Panel/Equifax

Figure 3A: Demand for Credit (Credit Inquiries) Before and After Bankruptcy Discharge



Sources: Federal Reserve Bank of Philadelphia Equifax Consumer Credit Panel and Federal Reserve Bank of New York Consumer Credit Panel/Equifax

Figure 4A: Total Credit Limit Before and After Bankruptcy Discharge



Sources: Federal Reserve Bank of Philadelphia Equifax Consumer Credit Panel and Federal Reserve Bank of New York Consumer Credit Panel/Equifax

APPENDIX II

Number of Cards After Filing and After Discharge
Robustness Testing

We perform additional analysis to explore the distribution of our independent variables. It may be argued that number of cards (column 2 of the regression results) is not a continuous variable and that it may not meet the assumptions behind an OLS analysis. The plot of regression residuals indicate that while they are not exactly normally distributed, the tail on the residuals is extremely thin. In addition, we perform a one-stage negative binomial analysis on the number of cards received after filing and after discharge. The results are presented in Table 4A. The coefficient of D_Filed for Chapter 13 is negative and significant for both the filing (column 2) and discharge (column 3) regressions, consistent with our earlier results using two-stage OLS though the quantitative effects are now smaller without the first-stage analysis.

Table 4A
Robustness Test Using Negative Binomial Regression

The dependent variable is the number of new credit card accounts that were opened after the bankruptcy filing date. This analysis includes all individuals who filed for bankruptcy during the period 2002:Q1-2010:Q4 and were discharged by 2012:Q2. Those Chapter 13 filers who were discharged after 2012:Q2 are not included in the analysis, as we would not have sufficient post-discharge data (six quarters following the discharge date) for them.

Independent Variables	(1) Total Number of Cards After Filing Date		(2) Total Number of Cards After Discharge Date	
	Coefficient Estimates	Standard Errors	Coefficient Estimates	Standard Errors
Intercept	-2.7481***	0.0389	-2.1881***	0.035
D_Filed for Chapter 13	-0.2755***	0.0038	-0.0928***	0.0039
D_Post-Reform Pre-Crisis (2005:Q3-2007:Q2)	0.0790***	0.0033	0.0132***	0.0027
D_Crisis (2007:Q3-2009:Q4)	-0.3317***	0.0043	-0.1828***	0.004
D_Post-Crisis (2010:Q1-2010:Q4)	-0.3320***	0.0038	-0.2047***	0.0032
Changes in Unemployment (from -6Q to -2Q)	-0.0481***	0.0011	-0.0368***	0.001
D_Submitted Credit Applications in the Last 2 Quarters	0.5285***	0.0025	0.5459***	0.0022
Number of Cards as of the Last 2 Quarters	0.3154***	0.0007	0.5900***	0.0009
Change in Credit Limit from -2Q (Before Discharge)	-0.0004**	0.0002	-0.0418***	0.0008
Credit Utilization Ratio	-0.5066***	0.0037	-0.0558***	0.0036
Risk Score as of 2Q Before Discharge	0.0023***	0.0000	0.0016***	0.0000
D_Has 1st Mortgage Before Discharge	-0.0573***	0.0033	-0.0283***	0.003
D_Less Than 25 Years Old	-0.3284***	0.007	-0.2486***	0.0062
D_Between 25 and 45 Years Old	0.0454***	0.0023	0.0624***	0.0021
D_60+ Days Delinquent on 1st Mortgage	0.0008	0.0068	-0.0210**	0.0086
D_60+ Days Delinquent on Auto Loans	-0.0327***	0.0055	-0.0569***	0.0061
D_60+ Days Delinquent on Cards	0.4596***	0.0032	0.0262***	0.0033
D_3 to 4 Quarters After BK Discharge	0.7622***	0.0034	0.1749***	0.0026
D_5 to 6 Quarters After BK Discharge	1.0286***	0.0034	0.2041***	0.0026
Homestead Exemption	-0.0011	0.0029	-0.0001	0.0026
Court Districts Dummies (not reported)				
R-Square	14.82%		22.60%	
Number of Observations	1,607,240		1,611,973	
Number of Filers	590,513		564,761	

Note: @ Includes credits outside of bankruptcy only; ***, **, and * represent significance at the 1 percent, 5 percent, and 10 percent level, respectively.