Credit Supply to Personal Bankruptcy Filers: Evidence from Credit Card Mailings

Song Han, Benjamin J. Keys, and Geng Li

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Federal Reserve Board

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Abstract

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JEL Classifications: J22, K35
Key words: personal bankruptcy, credit supply, credit card, mail solicitation, shrouding

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Abstract

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"You deserve some credit for getting through bankruptcy."

– A credit card mail solicitation

1   Introduction

Unsecured revolving consumer credit outstanding in the United States totaled $866 billion by the end of 2009, a five-fold increase in just three decades.[1] Over the same period, personal bankruptcy filings also increased by a factor of five, from less than 300,000 filings in 1980 to over 1.5 million filings in 2010.[2] These large rates of growth are striking particularly because creditors have the greatest exposure to borrowers' credit risk in unsecured credit lending, as unsecured claims are generally wiped out in the event of consumer bankruptcy. Recent work suggests that one driving factor of such rapid growth is the dramatic expansion of credit to risky borrowers, including those previously excluded from the credit market (Livshits, MacGee and Tertilt, 2007*b*; White, 2007; Dick and Lehnert, 2010). These studies argue that vast improvements in information technology and financial engineering made it possible for lenders to target specific consumer groups, to narrowly tailor credit offers, and to price-discriminate risk in essentially every corner of the market. However, there is little empirical evidence on how the supply of credit is related to credit risk, especially among high risk consumers.

In this paper, we attempt to fill this void by providing direct evidence on the supply of unsecured credit to consumers who previously filed for bankruptcy—a group of consumers carrying some of the most severe and conspicuous default risks. Using a unique proprietary data set of credit card mail offers that is administratively linked to recipients' credit records, we study how likely consumers who have filed for personal bankruptcy before are to receive credit card offers and characterize the terms of their offers. Throughout the paper, we

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[1]Source: Federal Reserve: `http://www.federalreserve.gov/releases/g19/Current/`. In contrast, over the same period, other types of consumer credit increased at a much slower pace.

[2]Source: The Administrative Office of the U.S. Courts. Personal bankruptcy filings peaked at roughly 2 million in 2005, the year of the most recent bankruptcy reform.

frequently refer a consumer whose credit record has a bankruptcy flag as a "filer" and a consumer whose credit record does not have a bankruptcy flag as a "nonfiler." Among offers, we analyze both the general terms of the credit card contract, such as credit limits and regular interest rates, as well as the often-neglected elements, terms that are referred to as "hidden" costs in the literature, such as other fees only disclosed in the fine print.

The central innovation of this paper is that we are able to observe directly the supply of unsecured credit—credit card mail offers.[3] Students of any market often observe only equilibrium quantities and prices. Because robust instrumental variables are hard to obtain, it is notoriously difficult to infer changes in supply and demand separately from observed variation in equilibrium quantity and price. In this regard, recent studies have examined post-bankruptcy use of credit using households surveys (Han and Li, 2011) or credit bureau data (Musto, 2004; Cohen-Cole, Duygan-Bump and Montoriol-Garriga, 2009). However, they have done so by examining the amount of debt borrowed (equilibrium quantity) and the interest rates at which loans were taken (equilibrium price). Consequently, these studies cannot identify the effect of bankruptcy on credit supply *per se*.

Investigating credit supply to consumers with personal bankruptcy history also sheds light on consumers' bankruptcy decisions. As consumers continue to need credit for smoothing consumption, facilitating transactions, and rebuilding creditworthiness after filing for bankruptcy, the extent to which post-bankruptcy access to credit is limited by a filing record should directly influence consumers' bankruptcy decision. For example, consider the two extremes: If a bankruptcy record permanently traps filers in financial autarky, then the economic costs of personal bankruptcy are much greater than if lenders are immediately forgiving or filing is anonymous. Despite a growing literature that attempts to understand households' bankruptcy decisions, to the best of our knowledge little has been done to empirically characterize the supply of unsecured credit to bankruptcy filers.[4] Thus, this paper

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[3]Gross and Souleles (2002*a*) analyze a panel of individual credit card accounts and are thus able to directly observe the intensive (but not extensive) margin of credit supply.

[4]See, e.g., Fay, Hurst and White (2002), Gross and Souleles (2002*b*), Keys (2010), Dick and Lehnert (2010).

complements the expanding literature that uses dynamic equilibrium models to study consumer credit markets (see, for example, Li and Sarte (2006), Chatterjee, Corbae, Nakajima and Rios-Rull (2007), and Livshits, MacGee and Tertilt (2007a)). The results presented herein on post-bankruptcy access to credit provide an empirical benchmark for calibrating these models.

Our main findings are summarized as follows: First, we find that bankruptcy filers are not excluded from unsecured credit markets, even in the aftermath of the most severe financial crisis in recent history. On average, more than 20 percent of consumers with personal bankruptcy history receive at least one credit card offer in a given month. The likelihood of a filer receiving an offer is only slightly lower than a nonfiler with comparable observable characteristics, including credit scores. Further, those who filed fewer than two years before are at least as likely to receive an offer as comparable nonfilers. In contrast, those who filed for bankruptcy more than five years earlier face a significantly lower likelihood of receiving credit card offers. Such differences between recent and more seasoned filers are consistent with the hypothesis that lenders target filers who remain years away from being eligible to file for bankruptcy again. As borrowers approach the lifting of the repeat-filing restriction, lenders are wary of greater default risk and extend less credit to such filers.

Second, we find both anecdotal and statistical evidence that offers to consumers with bankruptcy history are not sent out simply as part of a non-discriminatory "blanket campaign." Indeed, some lenders design their offers specifically to bankruptcy filers. For example, the header of one mail offer from a top credit card lender states: "*You deserve some credit for getting through bankruptcy.*"

Third, despite relatively small differences in the probability of receiving a credit card offer, we find that offers to bankruptcy filers are more restrictive, more expensive, and provide fewer take-up incentives than offers to their nonfiler counterparts. Such a distinction confirms the hypothesis that lenders narrowly tailor offers to subgroups of consumers. Specifically, we find that relative to offers to comparable nonfilers, those to filers have an interest rate about

80 basis points higher, have a minimum credit limit 30 percent lower, and are 30 percent less likely to be pre-approved. Filers are over 50 percent less likely to receive any rewards, yet are 50 percent *more* likely to pay an annual fee. Furthermore, filers benefit less from improving their credit score than nonfilers: For instance, while the credit limit triples for nonfilers who improve their credit scores from the first quartile to the maximum of the filers' score range, filers' credit limits do not improve whatsoever over the same range.

Fourth, we present (to the best of our knowledge) the first set of evidence on potential "shrouding" in credit card offers. In particular, we examine the effect of bankruptcy status on a set of contract terms that often show up in only the fine print, such as terms related to balance transfers and fees related to less frequently used transactions (e.g., transactions involving foreign exchanges). We find that credit card offers received by filers tend to contain higher "hidden" costs than offers to comparable nonfilers. These results are consistent with the predictions of Gabaix and Laibson (2006), in that even in a competitive market, lenders may choose to shroud terms in credit offers to consumers who may be either myopic or imperfectly informed (see, e.g. Angeletos, Laibson, Repetto, Tobacman and Weinberg (2001)).

The rest of the paper is organized as follows. Section 2 reviews the relevant legal and theoretical background; Section 3 describes our data; Section 4 presents empirical results on credit supply to bankruptcy filers, focusing on the most general terms of credit card contracts; Section 5 examines how nonstandard terms differ between filers and nonfilers; and Section 6 concludes.

2 Legal Background and Conceptual Framework

2.1 Legal Background

From a lender's perspective, the key feature of bankruptcy law is the provision of debt discharge. A debtor can file under Chapter 7 of the U.S. bankruptcy code to obtain a

discharge of unsecured debts.[5] Alternatively, the debtor can file under Chapter 13 of the code, whereby he or she obtains a debt discharge after paying off a portion of the debt through a three- to five-year debt repayment plan. One data limitation we encounter is that we do not observe the chapter under which a bankruptcy was filed. Later in the paper, we discuss why we think this data limitation does not materially bias our results.

The bankruptcy code may also affect the post-bankruptcy supply of credit through its restriction on repeated discharges. Since the Bankruptcy Abuse Prevention and Consumer Protection Act became effective in 2005, the law now prohibits a debtor from obtaining another bankruptcy discharge (Chapter 7) until eight years after a previous bankruptcy filing.[6] The implications of such restrictions on credit supply are discussed in detail later in the paper.

Finally, credit supply to bankruptcy filers is affected by the Fair Credit Reporting Act (FCRA). The FCRA regulates how a bankruptcy filing is reported by the credit bureaus. In particular, the FCRA permits a bankruptcy record to stay on credit reports furnished by the credit bureaus for, at most, 10 years after the date of relief or the date of adjudication (FCRA 605 (a)(1)). In addition, all other nonbankruptcy defaults can stay on a credit report for up to seven years (FCRA 605 (a)(5)). Because we use credit bureau data to identify filers, we can only identify those consumers who filed fewer than ten years earlier. Likewise, if credit bureau data are lenders' only source for bankruptcy information, then lenders cannot distinguish between consumers who filed more than ten years before and those who never filed for bankruptcy. Indeed, Musto (2004) finds that filers' credit scores increase appreciably after their bankruptcy flags are removed, inducing greater access and use of credit.

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[5]Some debts, such as student loans and unpaid tax liabilities, are deemed not dischargeable. See, for example, Administrative Office of the United States Courts (2006).

[6]The restriction on repeated Chapter 7 filing was six years prior to the 2005 reform.

2.2 Conceptual Framework

The market for unsecured credit is a classic setting with systematic information asymmetries. As Stiglitz and Weiss (1981) show, the contract terms posted by lenders will directly affect the riskiness of borrowers who take up loans, leading to a credit rationing equilibrium. Even when provided with information about the income and credit histories of consumers, some lenders nonetheless have difficulty identifying "bad" versus "good" borrowers ex ante (adverse selection). Further exemplifying the information asymmetry, borrowers who accept contracts with higher interest rates may subsequently undertake riskier borrowing behavior and heighten their ex post credit risk (moral hazard). In this environment, the bankruptcy flag may contain a number of different and possibly competing signals about a consumer's creditworthiness.

From a lender's perspective, a consumer who have filed for personal bankruptcy presents both a risk and an opportunity. On the one hand, bankruptcy records generally send a negative signal to lenders regarding consumers' risk and time preferences, their ability to manage debt, and the uncertainty of their income. Without the technology and information needed to distinguish high-risk filers from low-risk filers, a lender may choose not to offer any filers credit because of their perceived high average default risks. Even for lenders that extend credit to some bankruptcy filers, they may choose to offer minimal amounts of credit and charge high interest rates and fees in order to mitigate their losses in the event of default.

On the other hand, because bankruptcy allows for the discharge of most unsecured consumer debt, filers emerge from their bankruptcy proceedings with cleaner balance sheets than prior to filing. Recent filers may even have greater access to credit than nonfilers who have been struggling to make all due payments. Moreover, the law's refiling restriction described earlier effectively prevents recent filers from repeatedly filing. Although filers can still default on their unsecured debt without formally filing for bankruptcy, a state known as "informal bankruptcy" (Ausubel and Dawsey, 2004), in such a scenario creditors can pursue repayment through various debt collection methods, such as wage garnishment. Thus, all

else being equal, recent filers may have lower credit risks and so be rewarded with greater access to credit than those who are approaching refiling eligibility.

Bankruptcy not only signals borrowers' default risks, it may also alter borrowers' demand for credit, to which the terms of credit supply may react. Like other consumers, bankruptcy filers need credit for smoothing consumption and facilitating transactions. Because essentially all existing lines of unsecured credit become void after bankruptcy, filers could have a more inelastic demand for such credit.[7] Moreover, filers need to obtain and use fresh credit to rebuild their credit history, which is substantially damaged by their bankruptcy filing. Consequently, lenders may design their credit offers to target filers' need for credit and achieve profitability, despite filers' riskiness. For example, lenders may not need to sweeten the offers to such consumers through reward programs or promotional introductory "teaser" interest rates.

To summarize, we anticipate that bankruptcy filers would not be completely excluded from the credit market. Consumers with bankruptcy history may remain profitable from the lenders' perspective and therefore continue to receive offers of unsecured credit. However, more seasoned filers who are close to being eligible to refile could present greater default risks, making lenders wary of extending credit. In general, credit offers to filers are expected to have lower credit limits and charge higher interest rates and annual fees. Moreover, because filers may have a more inelastic demand for credit, their offers are expected to have fewer take-up incentives such as promotional interest rates or rewards programs. Lenders can adjust their offers on any or all of these contractual terms to maximize the take-up rate and the profitability of the credit contract.

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[7]In certain scenarios, such as some Chapter 13 filings, consumers may retain their existing credit card accounts conditional on agreeing to repay all or some of the existing debt on these accounts.

3 Data Description and Consumer Characteristics

3.1 Data Description and Sample Construction

Our main data source is Mintel Comperemedia's (henceforth "Mintel") proprietary surveys on credit offers to U.S. consumers.[8] The surveys are administratively linked to the credit history information of surveyed consumers by TransUnion, one of the three major credit bureaus. Each month, Mintel invites 8,000 consumers to participate in a survey requesting them to forward all incoming mail containing credit solicitations, such as offers of credit cards, home equity loans, and so on. Mintel requests that participating consumers return solicitations sent to any members of the household and that they complete an extensive demographic questionnaire.

The sample is stratified to represent the U.S. population in terms of household size and composition, age and education of household head, geographic region, market size, and total household income. On average, about 3,000 consumers choose to participate each month. To keep the sample of participating consumers nationally representative, Mintel subsequently assigns a weight to each respondent to account for differential propensities of participation across demographic groups. After processing the forwarded mail offers, Mintel sends the database to TransUnion, where participating consumers' credit history information is merged before the final data set is delivered to subscribers.

Our focus in this paper is on credit card offers. Such offers represent the lion's share— more than 50 percent—of all credit offers received by consumers and recorded in the Mintel data, a feature that is consistent with the view that credit cards are by far the credit product that relies most heavily on direct mailing.[9] Mintel records essentially all information on the forwarded credit offers, allowing us to study not only whether a consumer receives any credit card offers in a given month, but also a vast number of terms of the contracts offered. For

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[8]A consumer and marketing research company, Mintel is headquartered in the U.K. The data we use are compiled by its American subsidiary, Comperemedia.

[9]Mortgage and credit card balance transfers are the second and the third most common types of solicitation, accounting for 11 and 6 percent of the mail volume, respectively.

interest rates, we focus on the so-called "go-to" rate, which is the regular non-promotional interest rate for purchases.[10]

For credit limits, the data reveal a recent change in industry practice. Previously, credit card offers usually specified a *maximum* credit limit. However, since the start of the recent financial crisis, the vast majority of the offers now specify a *minimum* credit limit instead. We assume that the actual line of credit that the lender extends to a consumer is positively correlated with the minimum credit limit specified in the offer.

In addition to interest rates and credit limits, the Mintel data contain information on whether the card charges an annual fee, whether the offer provides a promotional interest rate, and whether the offer includes enrollment in a reward program. Furthermore, the data set includes contract terms that usually end up in the fine print, such as balance transfer features and other fees. This additional information helps us better compare offers to bankruptcy filers with those to other consumers along different aspects of the contracts offered.

The credit history information provided by TransUnion includes consumers' VantageScores, a credit score estimated from a proprietary model developed jointly by the three major credit reporting agencies. The data do not specify whether consumers' bankruptcies were filed under Chapter 7 or Chapter 13. While this limitation may hinder the identification of some consequences of bankruptcy filing, we believe that the effect on our conclusions are quantitatively small.[11] The credit history information allows us not only to identify bankruptcy filers but also to compute the number of years since the last filing. However, we can only identify bankruptcy filers who filed fewer than 10 years earlier, because, as required by the FCRA, all bankruptcy records are removed from credit reports 10 years after the date

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[10]Mintel also records other interest rates specified in the offers such as the interest rates on balance transfers and cash advances. Broadly speaking, these offered interest rates exhibit similar contrasts between filers and nonfilers. For more on interest rate pricing, see Ausubel (1991) and Stango (2000).

[11]According to the Administrative Office of U.S. Courts, in 2009, Chapter 13 filings accounted for about 30 percent of total initial personal bankruptcy filings. Furthermore, historically many Chapter 13 filings are converted to Chapter 7 filings when borrowers default on their repayment plans.

of bankruptcy discharge or the date of adjudication.[12] In addition to VantageScores and bankruptcy record, the data provide details on past and current credit activities, such as the number of new accounts opened, delinquency status, the number of credit history inquiries, and the amount of various types of household debt. Using these data we can estimate credit usage by consumers with bankruptcy history more comprehensively and compare with the patterns presented in Han and Li (2011), who use self-reported data from the Survey of Consumer Finances (SCF).

Our sample consists of monthly Mintel surveys during the 12 months between August 2009 and July 2010. Each observation of our data represents a credit card offer, with detailed information about the offer and its recipient. Demographic and credit history information is also provided for those consumers who did not receive an offer in the participation month. For our analysis, we applied the following sample selection rules. First, we kept only offers sent to participants and their spouses, as we did not have credit history information for other family members residing in the same location. Second, we kept only those consumers with valid credit histories and credit scores. Restricting the sample to consumers with valid credit history information may result in selection bias because the likelihood of successful mapping is greater for homeowners who have a stable address.[13] Third, in order to identify precisely the time since filing for bankruptcy, we kept only those filers whose number of bankruptcy filings is equal to the number of derogatory public records. The credit history data reveal the number of months since the last derogatory public record, with bankruptcy being one possible type of derogatory public record.[14] After applying these filters, our final sample contains 45,052 consumers who received 35,838 credit card offers.

Our sample period covers the immediate aftermath of the most severe financial crisis and credit crunch since the Great Depression. According to the aggregate statistics obtained

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[12]Consequently, the fraction of bankrupt consumers identified in the Mintel data is lower than the fraction found in survey data based on self-reported bankruptcy history.

[13]Indeed, because TransUnion merges credit history data using the names and addresses of participants, the fraction of consumers who are homeowners in our final Mintel sample is higher than in the SCF.

[14]Other types of derogatory public records besides bankruptcy include tax liens and judgments. This restriction removes 393 bankrupt consumers, about 14 percent of filers, from the sample.

from Mintel, monthly credit card mail solicitations plummeted from a peak of 600 million in 2006 to just 100 million in 2008. By the start of our sample, solicitations had recovered to roughly 300 million per month. Because of the uniqueness of our sample period, the extent to which the results in our paper can be generalized is an open question. However, the data were collected in an episode of tight credit conditions, during which even consumers with very good credit histories found it challenging to obtain credit. Thus our finding that many filers did receive credit card offers may indicate that credit supply to bankruptcy filers would be even greater in a normal credit market.[15] Finally, it is worth noting that, because the Mintel data are cross-sectional, our identification of how bankruptcy affects the supply of credit comes from comparing consumers with and without a bankruptcy record.[16]

3.2   Demographics

Table 1 presents descriptive statistics on key demographic and economic characteristics by bankruptcy filing status and the time since filing. All statistics, except the number of consumers in each column, are computed using the weights provided by Mintel. For comparison, we also include corresponding statistics on filers based on the 2007 SCF. About 5 percent of the sample have at least one bankruptcy record on their credit history in the Mintel data. This fraction is only half of what is observed in the SCF. As discussed earlier, this discrepancy is due in part to the mandatory removal of the bankruptcy record from credit reports at the tenth anniversary of the last filing.[17]

In the Mintel sample, filers and nonfilers are similar in mean age and family size. However, filers differ from nonfilers in some other key aspects. First, filers have notably lower

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[15]The majority of provisions of the new Credit CARD Act, which was enacted to limit certain types of fees and interest rates, took effect in February 2010 in the middle of our sample period. We have estimated all of our models separately for the periods before and after February 2010 and our results are qualitatively unchanged, suggesting that many issuers preemptively changed their offer terms. The impact of the CARD Act on the supply of unsecured credit is left as a promising area of future research.

[16]The implicit assumption is that unobservable consumer characteristics do not influence credit supply in a way that is systematically different between filers and nonfilers. Although we view this as a rather innocuous assumption, better identification would be possible should longitudinal data become available.

[17]In the 2007 SCF data, about 40 percent of filers reported that they filed for bankruptcy more than nine years before.

educational attainment: Only 22 percent of filers have college degrees, compared to 37 percent of nonfilers. Second, the fraction of homeowners among filers, 56 percent, is much lower than that among nonfilers, 76 percent. Third, filers are marginally more likely to be black (8.1 vs. 5.7 percent). Finally, filers are less likely to be married, a finding consistent with the notion that marital instability and financial instability are interconnected (see, for example, Keys (2010)). Aside from the fact that recent filers appear more likely to be married, demographic characteristics do not appear to be systematically different across recent filers (0-2 years) and more seasoned filers (3-5, 6-10 years).

The last two columns of Table 1 compare the Mintel sample with the SCF. The demographic make-up of the two samples is remarkably similar apart from racial and homeownership composition. The Mintel sample has fewer black consumers but more homeowners than the SCF. As noted above, this discrepancy likely reflects both the bias in the stratification of the Mintel sample and our sample selection restriction of requiring a valid credit history.

3.3   Liabilities

Table 2 presents summary statistics of liabilities by bankruptcy status and the time since last filing. On average, filers have nearly $50,000 of total debt, about 40 percent less than the average total debt of nonfilers. Despite the fact that most unsecured debts are discharged after bankruptcy, even recent filers have acquired significant lines of unsecured credit and tend to carry a sizable amount of unsecured debt. In terms of dollar values, filers on average have a comparable amount of installment loans as nonfilers. However, filers' installment loans are more substantial relative to their income levels. Finally, filers are more likely to have become delinquent in the 12 months prior to the survey. While the delinquencies of the most recent filers might have occurred prior to bankruptcy, seasoned filers also have more delinquent accounts than nonfilers. Interestingly, recent filers—those who filed within the previous 24 months—are more likely to be homeowners and earn higher incomes than those who filed 3 to 5 years before, suggesting that recent dramatic declines in house values may

have made otherwise better-off consumers seek bankruptcy protection.[18]

Broadly speaking, the statistics on liabilities and delinquencies in the Mintel data are consistent with the results documented by Han and Li (2011) using self-reported SCF data. These patterns suggest that filers may have gained access to various types of credit, including revolving credit, shortly after filing for bankruptcy, and that filers use these credit sources rather intensively, which may eventually lead to renewed debt payment difficulties. The results are also consistent with the findings of Musto (2004), who shows that bankruptcy filers' number of accounts and credit limits rise with the time since filing.

One concern about interpreting the significant levels of debt borrowed by bankruptcy filers is that such debt may reflect undischarged liabilities from Chapter 13 filings. Because we do not have information on the chapter under which a consumer filed for bankruptcy, we cannot separately identify how much debt was accumulated after filing. To address this concern, we examine the number of new accounts opened by filers and nonfilers. As shown in Table 3, similar fractions of filers and nonfilers have recently opened new accounts and, conditional on having opened at least one account, the number of accounts opened are also comparable. From a lender's perspective, all else being equal, Chapter 13 filers tend to be riskier than Chapter 7 filers because of the former's undischarged debt and the risk of repeated filing. Therefore, the credit supplied to filers observed in our data likely represents a lower bound of the credit granted to Chapter 7 filers.

Finally, in the lower part of Table 3 we present statistics on credit inquiries by bankruptcy status. Credit inquiries serve as a proxy for demand for credit, as lenders evaluate a potential borrower's credit quality by performing a "credit inquiry." We find that filers' credit reports are more likely to have had a recent credit inquiry (38 percent versus 28 percent) and, conditional on having at least one inquiry, the number of inquiries is also slightly higher for filers (2.1 versus 1.8). Because credit inquiries are most likely to occur when applying for credit, our statistics suggest that filers are more actively seeking credit than nonfilers.

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[18]The Mintel data show household income in brackets. We use the mean for each bracket as the dollar value of household income.

3.4 The VantageScore

Over the last 30 years, the credit score has become essentially the single most important factor in consumer lending (see, for example, Federal Reserve Board (2007)). Our credit score measure, the VantageScore, is a product developed by the three consumer credit reporting agencies (TransUnion, Experian, and Equifax). The VantageScore ranges from 500 to 990. As shown in Figure 1, the distribution of VantageScores differs significantly by bankruptcy status. First, the distribution of filers' VantageScores overlaps with scores of nonfilers, but the filers' distribution is substantially lower than the nonfilers'. The median of the filers' distribution is about 700, compared with 850 for the nonfilers' distribution. Second, the range of filers' VantageScores overlaps with only a subset of the lower end of the nonfilers' VantageScore distribution. Specifically, the entire distribution of bankruptcy filers' VantageScores falls below 800, covering only a segment of the left tail of nonfilers' distribution.

VantageScores appear to improve only slowly and moderately after filing for bankruptcy. As shown in Figure 2, the average VantageScore is just above 620 for the most recent filers, increases to about 660 for filers whose last filing was two years earlier, and then slowly rises to an average near 700 for those who filed 8-10 years earlier. To the extent that the cross-sectional relationship between VantageScore and the number of years since filing is consistent with the time series relationship for individual consumers, which we do not observe in the Mintel data, the persistently low VantageScores observed among filers suggest that either bankruptcy depresses the credit score as long as the flag stays on the credit history or that some risk characteristics or shocks that led the debtors to bankruptcy are persistent.

4 Empirical Analysis of Standard Terms of Credit Card Offers

We now present an empirical analysis of the likelihood of receiving a credit card offer and on a set of standard terms of the contracts offered, including regular interest rates for purchases, credit limits, annual fees, and reward programs. These terms are often featured in a conspicuous fashion in the offers, such as in the headlines of the offer letter or on a glossy insert. In the next section, we will present the analysis on other contractual terms that are typically found only in the fine print.

We begin by comparing the means of variables of interest between filers and nonfilers. These unconditional statistics present a plain overview of unsecured credit offered to bankruptcy filers. We then study conditional differences that control for demographic characteristics, liability information, and, in particular, credit scores. These conditional estimates speak more directly to the effects of the bankruptcy record itself on credit supply.

4.1 Descriptive Statistics

4.1.1 Credit Card Offerings by Bankruptcy Status

Table 4 shows the summary statistics of credit card offerings by bankruptcy filing status. Relative to nonfilers, filers as a whole are less likely to receive credit card offers—22 percent of filers received at least one credit card offer, significantly lower than that for nonfilers, 40 percent. However, putting these figures into perspective, quite a significant share of filers receive credit card offers in a given month. For example, if the probability of receiving an offer is independently and identically distributed across months, more than 95 percent of filers would receive at least one offer in a year.

Conditional on having an offer, filers generally were extended less favorable terms than nonfilers. Offers to filers are less likely to be pre-approved (20 versus 47 percent), have significantly lower minimum credit limits ($355 versus $1,636), and have higher interest

rates (17 versus 14 percent). Furthermore, offers to filers are more likely to charge an annual fee (62 versus 26 percent) but are less likely to have either a reward program (16 versus 78 percent) or a promotional interest rate (56 versus 70 percent).

Among the credit offers to filers, terms also vary relative to the time since filing. Consumers who filed more than six years earlier appear less likely to receive a credit offer than those who filed more recently, especially compared with those who filed within the last 24 months. Nineteen percent of filers who filed six to ten years earlier received at least one offer, relative to 28 percent for those who filed fewer than two years earlier. However, conditional on having an offer, terms offered generally improve with the time since filing. For example, seasoned filers tend to receive more pre-approved offers, lower interest rates, fewer annual fees, and more reward programs than recent filers.[19]

Note that charging an annual fee and offering rewards programs can be correlated. As a shorthand way to describe this relationship, Mintel sometimes refers to cards that do not charge a fee and do not offer rewards programs as "plain vanilla" cards. Cards charging a fee but not offering rewards programs are referred to as "credit building" cards, cards not charging a fee but offering rewards programs as "general market" cards, and cards charging a fee and offering rewards programs as "premium rewards" cards. As shown in the last rows of Table 4, we find that filers are overwhelmingly more likely to receive "credit building" cards, much less likely to receive "general market" cards, and essentially receive no "premium rewards" cards.[20]

4.1.2   The Role of Credit Scoring

Because credit scores play an important role in consumer lending, we next examine how credit card offers are related to the VantageScore. Figure 3 presents how the likelihood of

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[19]The only exception is that offers to the most recent filers have a higher likelihood of having promotional interest rates (65 percent) than more seasoned filers (52 percent).

[20]Bankruptcy filers, and, for that matter, other high risk consumers, are reportedly more likely to receive offers of secured cards—cards for which the consumer is required to put down some amount of security deposit. However, we find only a very small number of secured card offers in our sample.

receiving an offer and the key contractual terms offered vary with the credit score of offer recipients, by bankruptcy status.

As shown in the top-left panel, the likelihood of receiving an offer increases with VantageScores for both filers and nonfilers, with the rate of increase slightly lower for filers. That is, improving one's credit score has less of an impact on the odds of receiving an offer for bankruptcy filers. Further, filers have lower likelihoods of getting offers across almost the entire relevant range of VantageScores, suggesting that the bankruptcy flag has an additional impact on credit supply on top of one's credit score.

Unlike the rising likelihood of receiving an offer, minimum credit limits (top-right) stay low and flat for filers over essentially the entire support of filers' credit scores. Thus even if filers improve their credit scores dramatically after filing, they receive no greater credit limits than the riskiest filers. In contrast, for nonfilers, minimum credit limits increase noticeably with VantageScores above 700. Taken together, the first two charts show that bankruptcy filers gain relatively minimal access to unsecured credit by improving their credit scores while the bankruptcy flag remains on their credit record.

The interest rate series are noisy, especially for filers (middle-left). We do not see any pronounced decline in interest rates when credit scores are in the low ranges for either filers or nonfilers. For higher VantageScores (650 for filers and 600 for nonfilers) interest rates decline fairly consistently with VantageScores, with the series for filers staying mostly above that for nonfilers, likely reflecting the premium attributable to the bankruptcy history.[21] The likelihood of receiving an offer with promotional interest rates increases with VantageScore up to 650 and stays quite flat beyond this level for nonfilers (middle-right). This likelihood for filers also increases with their credit scores up to 650 and then declines beyond this level. For VantageScores above 650, filers are noticeably less likely to receive a promotional interest rate offer than nonfilers.

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[21]As in the top-left panel, the discrepancy between filers and nonfilers at the very low end of the VantageScore distribution appears to be counter-intuitive. But, because of the very small sample size at the lower tail of the distribution, the standard errors of the estimates are very large so the differences are not statistically significant.

The share of offers charging an annual fee (lower-left) declines with credit scores for both filers and nonfilers when scores are below 800. Above this level, the nonfiler series appears to increase, likely due to the increasing presence of "premium rewards" offers. Overall, the annual fee series for filers remains mostly above that of nonfilers. Finally, the share of offers having rewards programs (lower-right) increases with VantageScores for both filers and nonfilers, with the share of filers staying uniformly below that of nonfilers over the entire overlapping range of VantageScores.

To summarize, these figures show that, consistent with Table 4, even conditioning on credit scores, bankruptcy filers are less likely to receive credit card offers and, given an offer, have offers with lower minimum credit limits, higher interest rate spreads, and fewer incentive programs than nonfilers. Moreover, nonfilers benefit from an improved credit score more than filers, as filers continue to receive significantly smaller credit limits even after improving their score by as much as 150 points.

4.2   Regression Analysis

4.2.1   Model Specifications

In this section, we further isolate the effects of bankruptcy history on the supply of unsecured credit from other observable demographic, financial, and credit history characteristics. We include the following control variables in all regressions in addition to the bankruptcy status indicator (defined below): consumer age and age squared, marital status (1 if married, 0 otherwise), household size, race (1 if white, 0 otherwise), educational attainment (variables indicating whether the consumer has a high school diploma, some college education, or a college degree, with high school dropout being the excluded group), logarithm of household income, the ratio of outstanding total debt to household income, the ratio of outstanding revolving debt to household income, and a variable indicating whether a consumer has any existing unsecured revolving lines of credit (1 if yes, 0 otherwise).

In addition, motivated by the nonlinear relationship between credit offerings and Van-

tageScores shown in Figure 3, we control for credit scores in a flexible semi-parametric way by including a set of dummy variables for VantageScore bins. Each bin has a width of 50 VantageScore points (the 500-550 bin is the excluded group). Note that, to the extent that the observed VantageScores already reflect the impact of bankruptcy filing on credit scores, our regression analysis identifies the effect of bankruptcy flags on lenders' credit offer decisions beyond the influence of credit scores. Finally, we control for seasonal and macroeconomic fluctuations by including monthly fixed effects.

Our dependent variables of interest include both discrete and continuous variables. The discrete dependent variables include whether a consumer has any credit card offers, and conditional on having an offer, whether the offer is a pre-approved offer, whether the offer has an annual fee, a promotional interest rate, or a reward program. The continuous dependent variables include the minimum credit limits and spreads of the interest rates offered over the yields on two-year Treasury securities. We use interest spreads rather than the level of interest rates to control for the time variation in lenders' funding costs. We use probit and OLS regressions for discrete and continuous dependent variables, respectively, in our baseline analysis. For continuous dependent variables censored at 0, we also re-estimated our specifications using tobit models and the results (not shown) are essentially unchanged.

4.2.2   Filers vs. nonfilers

We first analyze how the supply of unsecured credit differs between filers and nonfilers, without distinguishing filers by time since filing. To indicate bankruptcy status, we include in our regressions a dummy variable equal to 1 for bankruptcy filers and 0 for others. The regression results are presented in Table 5. The reported figures for all OLS regressions are estimated coefficients, while those for probit regressions are estimated marginal effects, evaluated by changing the dummy independent variables from 0 to 1. One immediate observation from the table is that the estimated coefficients and marginal effects of the bankruptcy filer dummy are statistically significant at the 99 percent (or higher) confidence levels for all

models, confirming that the bankruptcy flag influences credit underwriting decisions above and beyond any effect it may have on credit scores.

Overall, the regression results show that, with all observable characteristics held constant, filers are less likely to receive a credit card offer in a given month. However, at 7 percentage points, the size of the difference is modest given that about 40 percent of nonfilers receive at least one offer in any month. Conditional on having an offer, filers tend to receive fewer pre-approved offers and have less favorable terms in the offers they receive. Specifically, the likelihood of filers receiving pre-approved offers is 13 percentage points lower than that for a comparable nonfiler (the average share of pre-approved offer for nonfilers is 47 percent). On average, spreads of interest rates offered to filers are higher by 77 basis points and the minimum credit limit offered is about $470 lower (with the mean for nonfilers equal to 13.8 percent and $1,636, respectively).

Thus, filers are less likely to receive any unsecured credit, and when they do receive offers, credit is less abundant and more expensive. Moreover, making credit offers to filers even less favorable, lenders have little incentive to sweeten offers to encourage take-up. Holding other factors constant, the likelihood of filers receiving an offer with a promotional introductory interest rate is 13 percentage points lower than that for nonfilers. But the probability of a filer's offer having an annual fee is 13 percentage points *higher*—a substantial difference given that only 26 percent of nonfilers' offers charge an annual fee. Finally, the likelihood of a filer's offer having a rewards program is 43 percentage points lower than a comparable nonfiler's, another substantial and significant difference.

Besides the coefficients on bankruptcy status, estimates on control variables also shed light on other aspects of lender behavior. For example, estimates on the VantageScore bin dummies show that credit supply improves with credit scores, and the improvement appears to be nonlinear. The increase in the likelihood of receiving an offer is on average 5 or 6 percentage points between VantageScore bins when the score is below 850. Above 850, the likelihood of receiving an offer does not increase much.

Even after controlling for credit scores and other liability characteristics, the likelihood of receiving a credit card offer remains about 5 percentage points higher for white consumers relative to comparable consumers of other races. This result is robust to a number of alternative model specifications, including those reported later in the paper. However, caution must be taken in interpreting this estimated racial disparity, as it may arise due to various reasons with entirely different policy implications.[22] Here we remain agnostic as to the source of the estimated racial disparity in credit card mailings and leave it for future research to shed more light on such an important issue.

Interestingly, consumers with higher educational attainment and income are more likely to receive credit offers, but the offers they receive are more likely to have an annual fee. We find that these consumers receive most of the so-called "premium rewards" cards—cards having both an annual fee and a rewards program. Relative to the general market cards that do not charge annual fees but offer rewards programs, premium rewards cards offer more exclusive and attractive rewards programs. Indeed, in separate probit and multinomial probit regressions (not shown), the likelihood of receiving premium rewards card offers are significantly higher for consumers with higher education and incomes. These regressions also show that filers are overwhelmingly more likely to receive "credit building" cards—cards having an annual fee but no rewards program. Minimum credit limits are higher for college graduates but, puzzlingly perhaps, lower for consumers with higher income. Such a relationship may reflect lenders' realization that high income households are more inclined to use credit cards in a less profitable way, to facilitate transactions rather than carrying large revolving balances. Consistent with this hypothesis, we find high income households on average receive fewer credit card offers than middle income households.

Finally, the liability side of the household balance sheet has a significant effect on credit card offers. Consumers with higher debt-to-income ratios not only have a lower likelihood of receiving any credit card offer, but also have worse terms on offers they receive. This

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[22]See, for example, Brevoort (2011), Cohen-Cole (2011), Edelberg (2007), Ladd (1998), and Ross and Yinger (2002) for general discussions on the racial effects estimated in consumer credit markets.

result confirms that lenders frequently use the so-called "back-end" ratio, the ratio between total debt payments and disposable income, in loan underwriting (Johnson and Li, 2010). Moreover, already having access to revolving credit has a positive "certification effect" on new credit card offers. All else being equal, having an existing revolving line of credit results in a greater likelihood of receiving a new card offer.

4.2.3 The Effect of Time Since Filing

We now examine to what extent the time since filing affects the likelihood of receiving credit card offers and the terms offered. To do so, we replace the bankruptcy filing dummy variable in the earlier regressions with three dummy variables indicating whether the last filing occurred within the last two years, three to five years earlier, or six to ten years earlier. The results are presented in Table 6 (for brevity, we do not show the estimated coefficients on other control variables, but those coefficients are essentially the same as in Table 5).

We find that a previous bankruptcy filing negatively affects the probability of receiving unsecured credit offers to the greatest extent for consumers who filed for bankruptcy more than six years earlier—those who are closest to being eligible to file for bankruptcy again. Even when these consumers receive an offer, such an offer tends to have the lowest credit limits. The tight control on the quantity of credit supplied to seasoned bankruptcy filers likely reflects lenders' concerns about renewed default risk associated with refiling. Thus, even though seasoned filers have more accounts open (as shown in Table 2 and in Musto (2004)), they acquire these accounts based on fewer credit offers than more recent filers. This finding in particular highlights the benefit of *directly* observing credit supply.

Other credit card terms tend to improve for the most seasoned filers, with the possible exception of the likelihood of a promotional interest rate. Conditional on receiving an offer, offers to the most seasoned filers are more likely to be pre-approved, to have lower regular interest rates, are less likely to have an annual fee, and are more likely to include a rewards program.

In contrast, consumers who filed for bankruptcy within the last 24 months are most likely to receive a credit card offer among all bankruptcy filers. However, credit offers to recent filers tend to be most expensive and belong to the "credit building" category. The interest rate spreads offered to these filers are 135 basis points higher than the average spreads for nonfilers and are more than 75 basis points higher than offers to more seasoned filers. Thus lenders tailor their offers based on filers' time since filing, and in doing so recognize recent filers' heightened demand for credit and minimal risk of default.

4.2.4   Robustness Analysis with Restricted Samples

In our baseline results, we compared bankruptcy filers with all other consumers. However, Figure 1 shows that bankruptcy filers' VantageScores are all below 800. To the extent that we have controlled for the credit score's effects on credit supply in a flexible semi-parametric way by including a vector of VantageScore bins, nonlinearity in the credit score's effect on credit supply will not bias our results. However, if other control variables are correlated with credit scores and potentially have nonlinear effects on credit supply, then using the entire nonfiler sample as the control group may bias our estimates.

As a robustness check, we exclude those nonfilers with VantageScores over 800 and re-estimate the models in Tables 5 and 6. Imposing this additional sample restriction excludes roughly two-thirds of the nonfiler observations. The results are reported in Table 7. Compared to the results in Tables 5 and 6, our main findings on bankruptcy status and time since filing are qualitatively unchanged and the differences in the point estimates are small.[23]

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[23]A further robustness check using only prime-age respondents aged 25 to 65 yielded results that were qualitatively equivalent to our reported estimates.

5 Less Conspicuous Contractual Terms, Hidden Costs, and Contract Complexity

In this section we focus on offer terms that generally are disclosed only in the fine print. Credit card contracts are notoriously complicated, with many features and potential costs. It is possible that many consumers, even the most sophisticated ones, do not take the time to read the entirety of the credit card offers they accept. Gabaix and Laibson (2006) show that in a competitive market with some consumers unaware of add-on prices (or, alternatively, holding myopic preferences), firms will intentionally "shroud" cost information from consumers in equilibrium. Here, we show that the credit card market is an ideal place to look for hidden add-on costs because of its complex contract structures. We further examine whether credit card offers to riskier consumers have more hidden costs or complex terms.

A typical credit card contract contains numerous terms, many of which are buried in the fine print, in addition to the relatively standard terms of credit, such as the credit limit or the annual fee that we studied earlier. For example, the typical credit card contract can have up to four prevailing interest rates: the rate charged on revolving purchases, on revolving balance transfers, on cash advances, and the "trigger" rate imposed when the borrower is delinquent. The Mintel database collects information on more than 90 potential attributes of any offered contract. This detailed information allows us to investigate a rich set of contract features that may not be immediately obvious to most borrowers. Here, we report our results on terms related to balance transfers and some unusual types of fees and interest rates.

5.1 Balance Transfers

We first examine the category of costs in the credit card contracts related to balance transfers. Balance transfers are transactions used to move a balance from one credit card to another, presumably to take advantage of lower interest rates or reduce utilization rates on other cards. Using the regression models similar to those reported earlier, we explore whether

contract terms related to balance transfers systematically differ between filers and nonfilers. The results are presented in Table 8. We find that filers are significantly less likely to receive a special offer related to balance transfers (such as a period with a low "teaser" introductory rate on transferred debts). This finding (shown in column 1) is consistent with our earlier result that filers are less likely to receive offers with introductory "teaser" rates for purchases as lenders have little incentive to sweeten offers extended to filers.

Among those filers who do receive a special offer of balance transfer, the introductory period to take advantage of lower rates is significantly shorter than for nonfilers (column 2). Furthermore, bankruptcy filers pay a higher interest rate on the transferred balance (column 3). Besides offering a special deal on balance transfer, lenders may entice borrowers by "waiving" fees that consumers usually expect to pay for the transfer services. As shown in column 4, filers are much less likely to receive offers that waive balance transfer fees. In addition, in results not shown, we also found that balance transfer offers extended to filers have much higher interest rate floors and ceiling, though the sample size of offers specifying these terms are much smaller (fewer than 2,000 out of nearly 36,000 credit card offers in our sample).

The differences in the costs of making a balance transfer for consumers with bankruptcy history could reflect the fact that filers are more likely to use balance transfer features, and could also serve as a less conspicuous way for lenders to offset greater expected default risks. These terms are unlikely to be fully understood by consumers unless they are actively shopping for a card to transfer balances to and carefully read the fine print.

5.2   Other Potentially Hidden Costs

We further examine a set of fees and interest rates outside of the standard annual fees and the "go-to" interest rate to explore other potential hidden costs in credit offers. These terms may differ from the headline terms in the offer in that they may only apply when certain contingency of use is met and the contingency may be disclosed only in the fine print. For

instance, as shown in Table 9, bankruptcy filers are also significantly less likely to be offered a waiver of annual fees than comparable nonfilers (column 1). Similarly, for those who receive a "cash back" reward, where some percentage of the amount charged on the card is returned at the end of the year (or an alternative duration), filers receive a significantly lower percentage (column 2). Thus offers that look similar may in fact lead to different benefits to different consumers. Filers also face higher costs in other aspects of their contracts. For example, when finance charges are applied to the balances carried over from one period to the next, filers pay higher minimum finance charges than comparable nonfilers (column 3).

Finally, the fees attached to credit card offers can be more complex than a simple annual fee. Although it is relatively rare, some card issuers charge a monthly "maintenance" fee. Traditionally this fee is levied in conjunction with premium services. However, these fees are also attached to the offers of many of the riskiest borrowers, with no commensurate rewards or services program. Less than two percent of nonfilers receive an offer with a monthly fee requirement, but over 15 percent of filers' offers have a monthly fee. As shown in column 4 of Table 9, this gap in the prevalence of monthly fees between filers and nonfilers remains highly significant and over 6 percentage points even after controlling for credit scores and other socioeconomic characteristics. Similarly, in a small sample of offers, we find suggestive evidence that offers extended to filers have higher foreign transaction fees (results not shown). Fees classified as "other" are also significantly more prevalent among filers' offers. Nine percent of filers' offers have additional fees attached, whereas less than two percent of nonfilers receive offers with these fees, and the difference remains statistically significant after controlling for other consumer characteristics (shown in column 5).[24]

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[24]These fees could include inactivity fees, paper statement fees, or other assorted fees. Mintel does not separately identify the components of this residual category, and some types of fees, such as explicit inactivity fees, have been outlawed by the CARD Act.

6 Conclusion

Characterizing the supply of unsecured credit to risky borrowers advances our understanding of credit markets and potentially provides policy guidance regarding regulation of the credit card industry. Nevertheless, students of the consumer credit market have long recognized the difficulty in identifying credit supply *per se* from observed variation in equilibrium quantities and prices. We take advantage of a unique data set of credit card mail solicitations to directly observe credit card offers mailed to personal bankruptcy filers and to contrast such offers to those extended to other consumers.

On the one hand, we find that despite bankruptcy filers' conspicuous credit risk, they continue to receive a considerable amount of credit card offers. Indeed, recent bankruptcy filers are at least as likely to receive credit card offers as comparable nonfilers. On the other hand, although bankruptcy filers do not face outright exclusion from credit markets, their offered terms tend to be far less favorable than nonfilers'—they have significantly lower minimum credit limits, higher interest rates, more fees, and more "hidden" terms that may make credit more costly.

Thus, bankruptcy filers may find it difficult to smooth consumption over time or to insure against idiosyncratic income risk using their credit cards. However, having a new credit card, notwithstanding its low credit limit and expensive interest rates, helps borrowers rebuild their credit records, which in turn may lead to better treatment in other credit markets, such as mortgages and car loans. Studying the broader welfare implications of access to credit for bankruptcy filers represents a promising research agenda.

Furthermore, our findings shed light on the empirical accuracy of underlying assumptions built into dynamic equilibrium models of consumer credit and default behavior. Research using such models has grown rapidly in the past decade (for example, Chatterjee et al. 2007, Chatterjee et al. 2011, Livshits, MacGee, and Tertilt 2007, Athreya et al. 2009). Our results suggest that, in contrast to the stylized assumption typically made in such models that filers can reenter credit markets with a constant likelihood in each period, bankruptcy filers

receive credit offers soon after filing for bankruptcy, but the credit they receive is limited and costly, and, if anything, diminishes over time. These findings reveal the crucial complexity of post-bankruptcy access to credit, thereby providing useful empirical guidance for enriching and calibrating such models.

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Distribution of Vantage Scores by Bankruptcy Status
Kernel Density Estimate
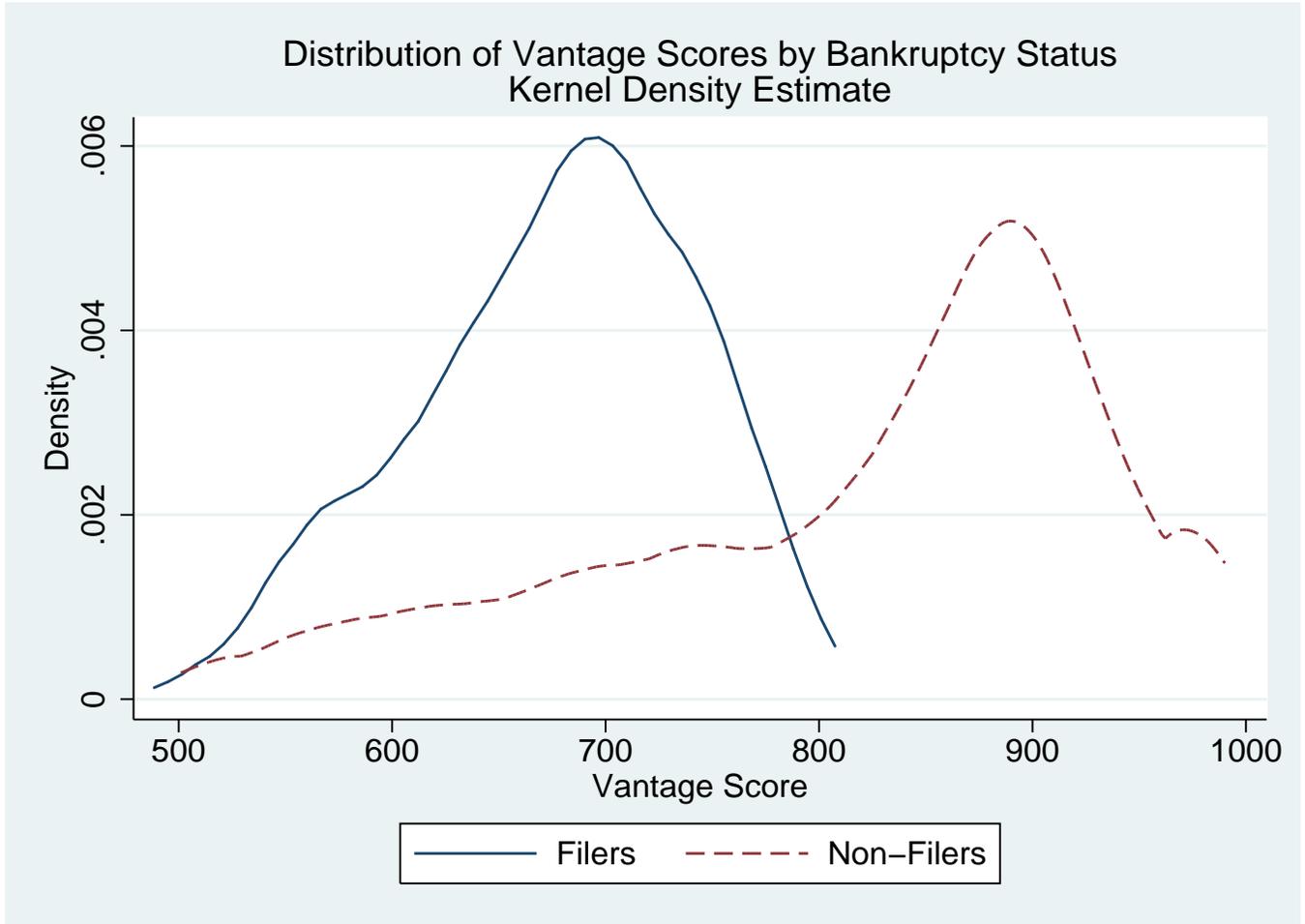
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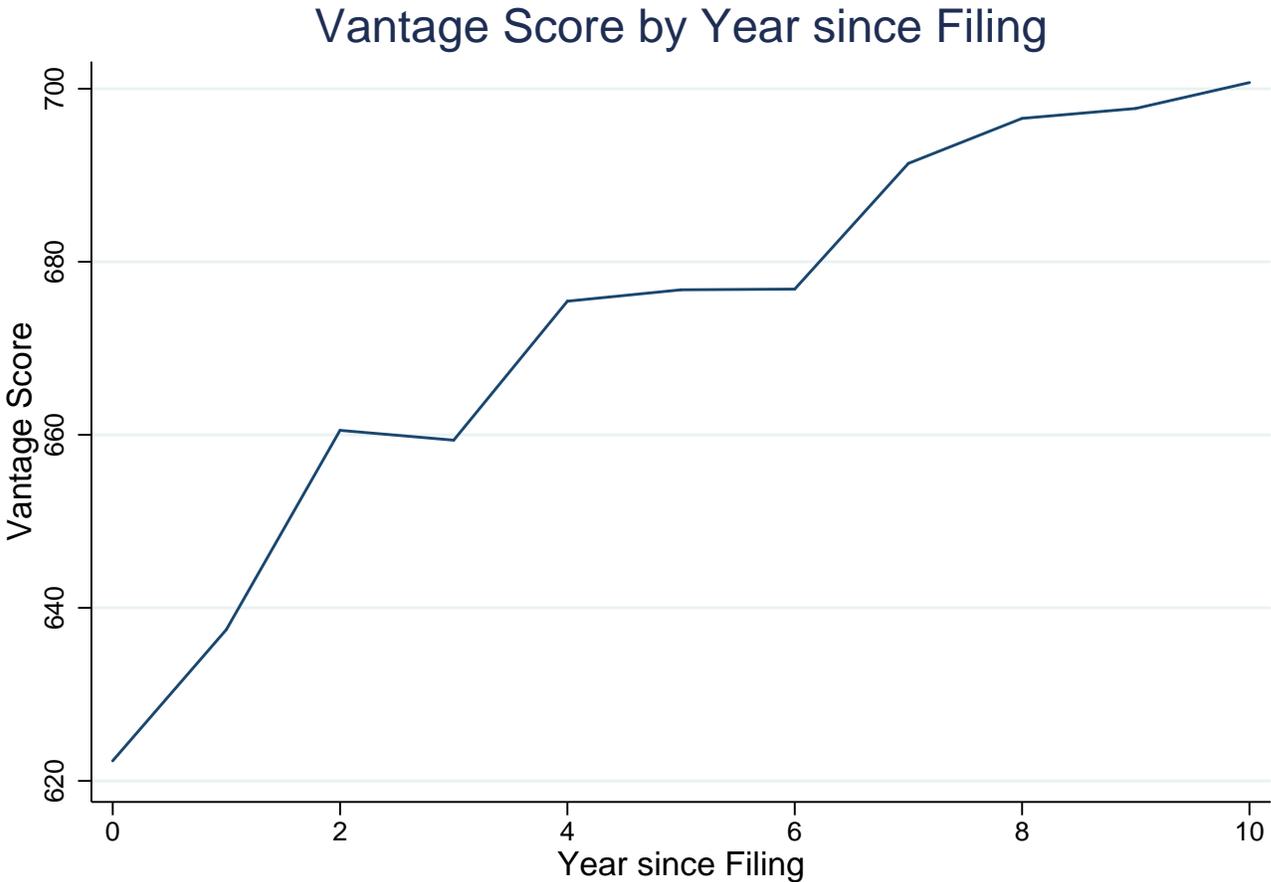
Figure 3: Credit Card Offers by VantageScore and Filing Status
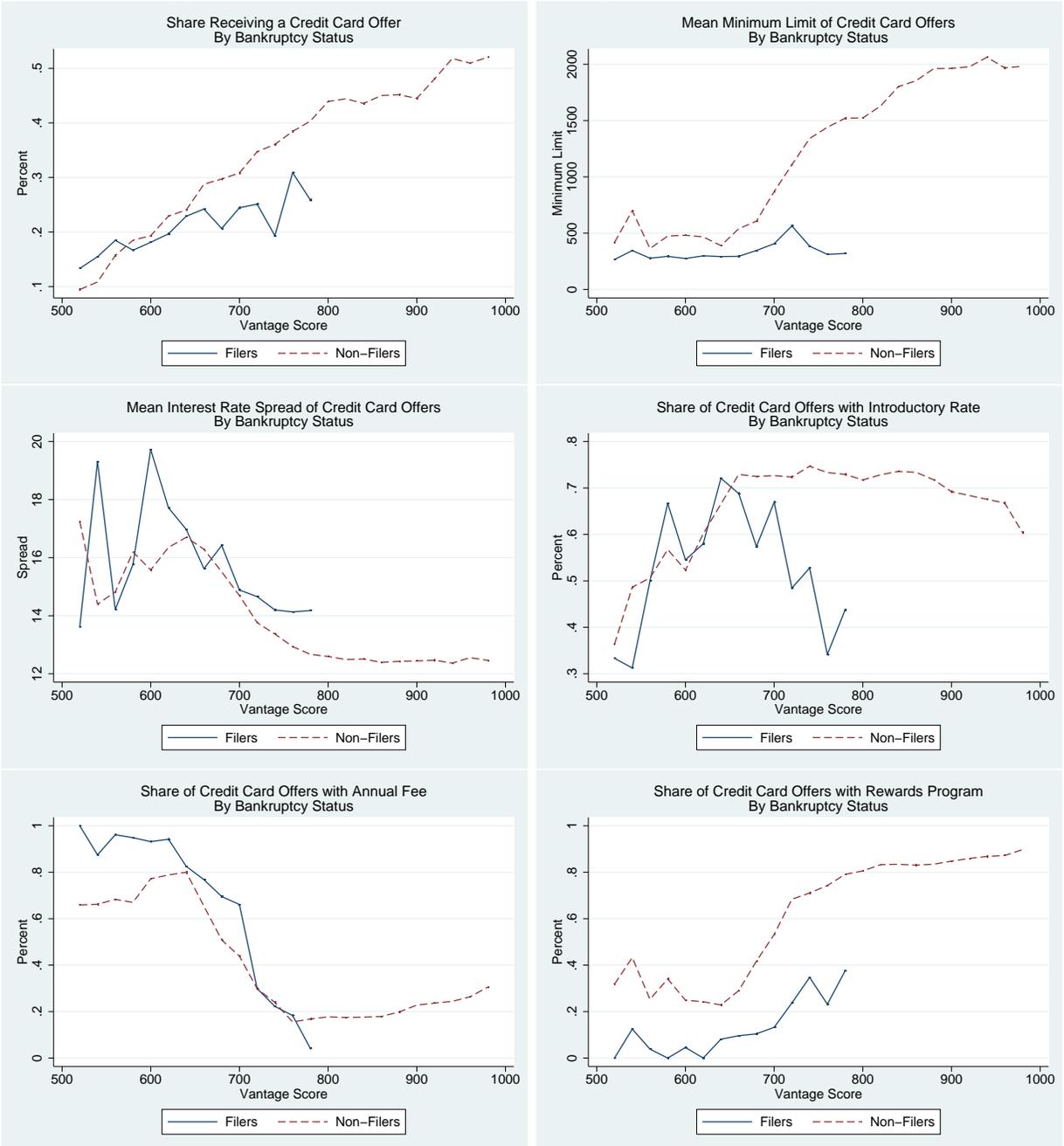
Table 1: Demographics by Bankruptcy Filing Status and Timing

	Mintel					SCF	
			Years since last filing				
	Nonfilers	Filers	0-2 years	3-5 years	6-10 years	Nonfilers	Filers
Mean age	52.5	50.4	48.0	49.9	51.6	50.1	49.2
Mean household size	2.6	2.7	3.0	2.7	2.6	2.5	2.7
Married (%)	60.6	52.8	63.8	52.0	48.0	59.5	54.1
Black (%)	5.7	8.1	6.9	10.0	7.6	12.2	15.3
High School (%)	32.3	39.6	37.5	43.8	38.2	32.0	39.1
Some College (%)	21.7	24.4	22.3	25.4	24.5	17.7	23.4
College (%)	37.3	22.0	25.0	19.1	22.5	36.9	23.4
Homeowner (%)	76.0	55.7	57.5	52.0	57.7	62.5	51.4
Number of consumers	42,675	2,377	487	657	1,233	3,982	436

Note: All statistics except numbers of consumers are computed using the weights provided by Mintel and the SCF.

Table 2: Liabilities Statistics by Bankruptcy Filing Status

	Nonfilers	Filers	Years since last filing		
			0-2 years	3-5 years	6-10 years
Total debt ($)	87,659	49,812	54,490	35,846	56,801
Nonmortgage debt ($)	21,033	14,255	11,122	12,744	16,342
Revolving debt ($)	9,951	3,586	2,096	2,933	4,541
Revolving credit limit ($)	40,545	7,873	5,510	6,363	9,652
Number of revolving accounts	5.9	3.6	2.2	3.6	4.3
Installment debt ($)	10,523	10,523	8,935	9,747	11,587
Income ($)	77,616	54,053	58,385	48,293	55,473
N. of del. accounts	0.38	0.77	1.03	0.58	0.78

Note: Number of delinquent account refers to the accounts that were 30 or more days past due during the last 12 months. All statistics are computed using the weights provided by Mintel.

Table 3: New Accounts Opened and Inquiries Made on Credit History

	Timing	All trades		Bank cards	
		Nonfilers	Filers	Nonfilers	Filers
Percent of consumers opened trades(%)	previous 3 months	15.8	14.5	5.4	4.7
Avg. num. of trades opened	previous 3 months	1.2	1.3	1.1	1.1
Percent of consumers opened trades(%)	previous 6 months	28.5	24.7	10.2	8.0
Avg. num. of trades opened	previous 6 months	1.4	1.5	1.1	1.1
Percent of consumers opened trades(%)	previous 12 months	47.4	43.4	20.3	17.3
Avg. num. of trades opened	previous 12 months	1.8	1. 9	1.3	1.3
Percent of consumers opened trades(%)	previous 24 months	70.7	70.6	40.2	42.8
Avg. num. of trades opened	previous 24 months	2.8	3.0	1.7	1.7

		Nonfilers	Filers
Percent of consumers with credit inquiry	previous 6 months	28.9	38.0
Avg. num. of credit inquiry	previous 6 months	1.8	2.1

Note: Statistics referring to the previous M months do not include the consumers who filed for personal bankruptcy within this period. Average number of trades open is calculated conditional on having at least one such trade was opened. All statistics are computed using the weights provided by Mintel.

Table 4: Credit Card Offerings by Bankruptcy Filing Status

	Nonfilers	Filers	Filed		
			0-2 years	3-5 years	6-10 years
Received at least one offer (%)	39.7	21.9	28.2	22.1	19.3
Ave. num. of offers received (monthly)	2.1	1.8	2.0	1.8	1.7
Pre-approved offer(%)	46.5	20.1	12.0	17.6	27.1
Avg. min credit limit ($)	1,636	355	294	409	360
Avg. interest rate (%)	13.8	16.5	17.8	16.1	15.8
Have introductory rate (%)	69.8	56.3	65.1	53.9	51.9
Have annual fee (%)	26.0	61.5	82.3	60.2	48.1
Have rewards program (%)	77.9	15.7	2.1	8.7	29.4
Plain vanilla (%)	13.8	25.1	15.7	32.0	27.0
Credit building (%)	8.3	59.2	82.3	59.3	43.6
General market (%)	60.1	13.5	2.1	7.9	24.9
Premium rewards (%)	17.7	2.2	0.0	0.9	4.5

Note: Average number of offers is calculated conditional on receiving at least one offer of credit card. All statistics are computed using the weights provided by Mintel. Plain vanilla, credit building, general market, and premium rewards are four types of credit card offerings that, in this order, charge no annual fee and carry no rewards program, charge an annual fee and carry no rewards program, charge no annual fee and carry rewards programs, and charge an annual fee and carry rewards programs, respectively.

Table 5: Credit Card Offers by Bankruptcy Status: Full Sample

		Dependent variables:					
	Having offer	Pre-approved (%)	Interest spreads	Min. limit	Having intro rates	Having annual fee	Having rewards
Indep. var.	(1)Probit	(2) Probit	(3) OLS	(4) OLS	(5) Probit	(6) Probit	(7) Probit
Filer	-0.068***	-0.134***	0.773***	-472.066***	-0.129***	0.129***	-0.429***
	(0.011)	(0.024)	(0.097)	(67.670)	(0.018)	(0.018)	(0.021)
Age	0.003***	0.003	0.013**	-9.631*	0.002**	0.001	0.001
	(0.001)	(0.002)	(0.006)	(5.154)	(0.001)	(0.001)	(0.001)
Age sq./100	-0.005***	-0.004***	-0.010*	10.747**	-0.003***	-0.001	-0.001
	(0.001)	(0.001)	(0.006)	(4.671)	(0.001)	(0.001)	(0.001)
Married	0.006	0.008	0.012	-4.965	0.008	0.004	0.018***
	(0.006)	(0.010)	(0.039)	(31.338)	(0.007)	(0.006)	(0.006)
Household size	0.005**	0.001	0.018	-13.922	0.012***	-0.018***	-0.012***
	(0.002)	(0.004)	(0.014)	(11.031)	(0.002)	(0.002)	(0.002)
White	0.046***	0.022	-0.072	74.960*	0.014	-0.056***	0.025***
	(0.008)	(0.014)	(0.055)	(44.998)	(0.009)	(0.009)	(0.009)
High school	0.014	-0.026	-0.034	40.360	-0.005	-0.010	0.033***
	(0.009)	(0.016)	(0.063)	(48.405)	(0.011)	(0.011)	(0.009)
Some college	-0.010	-0.043**	-0.055	4.514	-0.053***	0.036***	0.038***
	(0.010)	(0.017)	(0.068)	(52.492)	(0.012)	(0.012)	(0.009)
College	0.033***	-0.057***	-0.043	128.180**	-0.119***	0.091***	0.069***
	(0.010)	(0.017)	(0.066)	(51.259)	(0.012)	(0.011)	(0.009)
Log(income)	0.038***	-0.023***	-0.074***	-12.176	-0.058***	0.032***	0.037***
	(0.004)	(0.006)	(0.024)	(19.312)	(0.004)	(0.004)	(0.004)
Total debt ratio	-0.003***	-0.009***	-0.003	-30.028***	-0.003***	0.003***	0.001
	(0.001)	(0.002)	(0.006)	(5.860)	(0.001)	(0.001)	(0.001)
Rev. debt ratio	0.002	0.013	-0.157***	-44.857	-0.007	-0.048***	0.031***
	(0.005)	(0.010)	(0.040)	(32.766)	(0.007)	(0.007)	(0.007)
Have rev. line	0.093***	0.102***	-0.027	-60.397	0.010	-0.007	-0.008
	(0.011)	(0.025)	(0.108)	(83.235)	(0.018)	(0.017)	(0.015)
VS 550-600	0.116***	-0.067	-1.204***	-210.888	0.087**	0.094**	-0.095**
	(0.024)	(0.057)	(0.269)	(215.081)	(0.036)	(0.046)	(0.045)
VS 600-650	0.173***	-0.083	-0.024	-255.866	0.128***	0.208***	-0.180***
	(0.023)	(0.054)	(0.256)	(204.660)	(0.030)	(0.048)	(0.047)
VS 650-700	0.232***	-0.067	-0.655***	-177.079	0.198***	0.007	-0.057
	(0.022)	(0.053)	(0.248)	(199.842)	(0.022)	(0.037)	(0.038)
VS 700-750	0.277***	0.098**	-2.389***	323.886	0.218***	-0.174***	0.115***
	(0.021)	(0.049)	(0.246)	(198.987)	(0.021)	(0.019)	(0.021)
VS 750-800	0.329***	0.234***	-3.521***	700.992***	0.216***	-0.245***	0.171***
	(0.020)	(0.041)	(0.246)	(198.937)	(0.022)	(0.011)	(0.015)
VS 800-850	0.385***	0.249***	-3.870***	883.108***	0.233***	-0.268***	0.211***
	(0.019)	(0.042)	(0.244)	(197.572)	(0.024)	(0.014)	(0.015)
VS 850-900	0.396***	0.223***	-3.988***	1112.948***	0.258***	-0.301***	0.247***
	(0.019)	(0.046)	(0.243)	(196.963)	(0.028)	(0.021)	(0.020)
VS 900-950	0.403***	0.208***	-3.966***	1208.856***	0.237***	-0.267***	0.238***
	(0.019)	(0.046)	(0.244)	(197.586)	(0.027)	(0.019)	(0.017)
VS 950-990	0.421***	0.177***	-3.894***	1284.383***	0.214***	-0.229***	0.223***
	(0.018)	(0.046)	(0.246)	(199.473)	(0.024)	(0.016)	(0.012)
Monthly dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	45,052	35,825	22,518	17,591	35,838	35,838	35,838
Mean of dep. var.	0.40	0.47	13.8	1,636	0.70	0.26	0.78

Note: This table shows the estimated results of the effect of bankruptcy filing on the likelihood of receiving credit card offers and the terms offered. *, **, and *** denote whether the estimated coefficient (for OLS) or marginal effect (for probit) is statistically significant at the 90, 95 and 99 percent level, respectively.

Table 6: Credit Card Offers by Time since the Last Filing: Full Sample

	Dependent variables:						
	Having offer	Pre-approved (%)	Interest spreads	Min. limit	Having intro	Having annual fee	Having rewards
Indep. var.	(1)Probit	(2) Probit	(3) OLS	(4) OLS	(5) Probit	(6) Probit	(7) Probit
Filed 0-2 years before	0.037	-0.138***	1.335***	-366.530***	-0.031	0.283***	-0.630***
	(0.024)	(0.047)	(0.171)	(117.181)	(0.030)	(0.037)	(0.045)
Filed 3-5 years	-0.048**	-0.187***	0.467***	-455.950***	-0.148***	0.166***	-0.602***
	(0.020)	(0.042)	(0.170)	(113.444)	(0.032)	(0.032)	(0.033)
Filed 6-9 years	-0.121***	-0.099***	0.595***	-564.541***	-0.184***	0.019	-0.276***
	(0.014)	(0.035)	(0.145)	(103.045)	(0.027)	(0.023)	(0.029)
Additional controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Monthly dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	45,052	35,825	22,518	17,591	35,838	35,838	35,838
Mean of dep. var.	0.40	0.47	13.8	1,636	0.70	0.26	0.78

Note: This table shows the estimated results of the effect of time since filing on the likelihood of receiving credit card offers and the terms offered. We replace the bankruptcy filing dummy variable in Table 5 with three dummy variables indicating whether the last filing occurred within the last two years, three to five years earlier, or six to ten years earlier. The estimated coefficients on the other control variables, which are the same as in the specification shown in Table 5, are not shown here but are essentially the same as in Table 5. *, **, and *** denote whether the estimated coefficient (for OLS) or marginal effect (for probit) is statistically significant at the 90, 95 and 99 percent level, respectively.

Table 7: Robustness Analysis: VantageScores ≤ 800

	Dependent variables:						
	Having offer	Pre-approved (%)	Interest spreads	Min. limit	Having intro	Having annual fee	Having rewards
Indep. var.	(1)Probit	(2) Probit	(3) OLS	(4) OLS	(5) Probit	(6) Probit	(7) Probit
Panel A. Filers vs. Nonfilers							
Filer	-0.059***	-0.146***	0.669***	-423.511***	-0.113***	0.128***	-0.382***
	(0.009)	(0.023)	(0.155)	(52.727)	(0.018)	(0.019)	(0.016)
Panel B. Time Since Filing							
Filed 0-2 years before	0.029	-0.138***	1.253***	-298.962***	-0.018	0.274***	-0.483***
	(0.021)	(0.043)	(0.271)	(90.568)	(0.030)	(0.035)	(0.020)
Filed 3-5 years before	-0.042**	-0.208***	0.409	-421.331***	-0.121***	0.159***	-0.462***
	(0.017)	(0.036)	(0.270)	(87.798)	(0.032)	(0.033)	(0.017)
Filed 6-9 years before	-0.100***	-0.107***	0.440*	-519.555***	-0.175***	0.013	-0.252***
	(0.011)	(0.033)	(0.231)	(79.758)	(0.027)	(0.028)	(0.025)
Additional controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Monthly dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	17,065	4,663	8,500	6,066	8,506	8,506	8,506
Mean of dep. var.	0.28	0.41	15.1	990	0.69	0.40	0.56

Note: This table shows the estimated results with the sample restricted to those consumers with VantageScores lower than 800. Panels A and B use the same model specifications as in Tables 5 and 6, respectively. *, **, and *** denote whether the estimated coefficient (for OLS) or marginal effect (for probit) is statistically significant at the 90, 95 and 99 percent level, respectively.

Table 8: Balance Transfer Terms and Conditions

	Dependent variables:			
	Bal. trans. teaser	Teaser period	Bal. trans. int. rate	Waive bal. trans. fee
Indep. var.	(1) Probit	(2) OLS	(3) OLS	(4) Probit
Filer	-0.257***	-1.362***	1.032***	-0.028***
	(0.013)	(0.165)	(0.126)	(0.002)
Additional controls?	Yes	Yes	Yes	Yes
Monthly dummies?	Yes	Yes	Yes	Yes

Note: This table shows the estimated results of the effect of bankruptcy filing on the terms related to balance transfers. The model specifications are the same as in Table 5. *, **, and *** denote whether the estimated coefficient (for OLS) or marginal effect (for probit) is statistically significant at the 90, 95 and 99 percent level, respectively.

Table 9: Additional Costs and Fees

	Dependent variables:				
	Waive annu. fee	Cash back rate	Min. fin. charge	Monthly fee	Other fees
Indep. var.	(1) Probit	(2) OLS	(4) OLS	(5) OLS	(6) OLS
Filer	-0.031***	-0.585***	0.097***	0.063***	0.039***
	(0.005)	(0.140)	(0.016)	(0.010)	(0.008)
Additional controls?	Yes	Yes	Yes	Yes	Yes
Monthly dummies?	Yes	Yes	Yes	Yes	Yes

Note: This table shows the estimated results of the effect of bankruptcy filing on a set of additional costs and fees that are generally written in the fine print in credit card offers. Model specifications are the same as in Table 5. *, **, and *** denote whether the estimated coefficient (for OLS) or marginal effect (for probit) is statistically significant at the 90, 95 and 99 percent level, respectively.