

Liquidity Constraints and Consumer Bankruptcy: Evidence from Tax Rebates*

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Abstract

This paper tests whether legal fees prevent liquidity-constrained households from declaring bankruptcy. We study how the 2001 and 2008 income tax rebates affected consumer bankruptcies. By exploiting the randomized timing of rebate checks, we estimate that the rebates caused a roughly 3-percent increase in consumer bankruptcies. We find that the increase in bankruptcies is driven by households that are more likely to be liquidity-constrained. The increase in bankruptcies is mostly driven by Chapter 7 bankruptcies. Chapter 13 filers, who can defer their legal fees, are relatively unaffected by the tax rebates. Our results are consistent with the existence of liquidity-constrained households who cannot afford to file for bankruptcy.

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1 Introduction

Liquidity-constrained households cannot borrow against their future wealth, and thus face severe limits on their current consumption. A growing literature in economics finds evidence that households are liquidity constrained. Liquidity constraints may cause consumers to respond excessively to transitory changes in income (Shapiro and Slemrod, 2003; Souleles, 1999; Hsieh, 2003; Stephens, 2003), restrict entry into entrepreneurship (Hurst and Lusardi, 2004), and limit investment in human capital (Dynarski, 2003).

In this paper, we focus on an understudied effect of liquidity constraints: their effect on enrollment in social insurance programs. When social insurance programs require entrance fees in exchange for benefits, liquidity constraints can prevent households from enrolling.¹ In particular, we focus on the consumer bankruptcy system, a form of social insurance that requires households to pay an average of \$1,500 in fees for their debts to be discharged (Sullivan et al., 2001; GAO, 2008).² Such fees may prevent liquidity-constrained households from declaring bankruptcy.

To test for such a mechanism, we exploit plausibly exogenous variation in liquidity induced by the 2001 and 2008 income tax rebates. The rebates were distributed over 9–10 week periods in both years, and households received between \$300 and \$1,200. We exploit the randomized timing of the rebate checks to estimate the causal effect of a temporary, anticipated increase in liquidity on consumer bankruptcies.

We find that the tax rebates led to a roughly 3-percent increase in consumer bankruptcies. The magnitude of the effect is similar across the two rebate years and is precisely estimated. Our sample is composed of filings under two chapters of the bankruptcy code. Chapter 7 bankruptcies compose about 70% of all bankruptcies, and the increase due to tax rebates can be nearly entirely attributed to Chapter 7 filings. Chapter 13 bankruptcies, in contrast, decrease only slightly as a result of the rebates. Households filing for Chapter 13 are less likely to be liquidity-constrained because their legal fees are allowed to be postponed. Thus, the pattern by chapter is consistent with the existence of liquidity constraints.

We interpret our results with a simple theoretical model. The model suggests that, under reasonable assumptions, the tax rebates only affect the filing decisions of liquidity-constrained households. It further implies that our empirical results are likely to be a conservative estimate of the share of households who would like to file for bankruptcy but

¹Many forms of social insurance involve upfront costs that may be especially onerous for liquidity-constrained households. For instance, disability insurance requires applicants to undergo a lengthy verification process, and unemployment insurance requires beneficiaries to wait 1 to 3 weeks for benefits.

²Bankruptcy is a form of social insurance in that it insures households against shocks that lead to defaults on formal, financial debt. It provides such households with a mechanism for resolving their debt and obtaining a “fresh start.”

are liquidity constrained.

This paper is part of a growing literature on the economic effects of income tax rebates. Most related papers focus on the effects of the tax rebates on consumption and expenditures (Johnson et al., 2006; Agarwal et al., 2007; Shapiro and Slemrod, 2003). Other studies have estimated the effect of the tax rebates on mortality and morbidity (Evans and Moore, 2011; Gross and Tobacman, 2011). To our knowledge, no studies have focused on the effect of the tax rebates on enrollment in social insurance programs in general or consumer bankruptcy in particular.

The paper is also related to research on the role of liquidity constraints in unemployment insurance (Hansen and İmrohorođlu, 1992; Chetty, 2008). Such studies emphasize that liquidity constraints can play a large role in determining the optimal generosity of unemployment insurance. Our contribution is to offer similar evidence for the consumer bankruptcy system. The laws governing consumer bankruptcy have been the subject of much debate, culminating in the 2005 Bankruptcy Abuse Prevention and Consumer Protection Act (BAPCPA). The evidence documented below can inform that debate; the optimal parameters of the consumer bankruptcy system depends critically on the existence of constrained filers.

The paper proceeds as follows. The next section provides background on the tax rebates and describes the bankruptcy data that we have compiled. Section 3 outlines a theoretical model that explains how income transfers can affect bankruptcy rates. Section 4 presents our empirical results. Section 5 discusses the policy implications of our findings, while 6 concludes.

2 Background on Our Bankruptcy Data and the Tax Rebates

In order to estimate the impact of the rebates on bankruptcy rates, we have compiled a unique data set based on the Public Access to Court Electronic Records (PACER) system.³ Our sample consists of all non-business bankruptcy filings in the 72 courts that agreed to grant us full electronic access to their dockets. Figure 1 presents a map of our sample coverage. We verified that the data match aggregate counts of bankruptcies reported by the Administrative Office of the US courts.

Table 1 compares the characteristics of districts in our sample to those not in our sample. The sample covers roughly 74% of bankruptcies in the United States and 93% of the population, and coverage remains consistent in 2001 and 2008. The districts in the sample have populations with a slightly lower income, lower proportion college educated, and a lower

³We are grateful to Tom Chang for providing some of the computer code necessary to parse the electronic records.

unemployment rate.

The tax rebates were disbursed as a part of the stimulus bills passed by Congress in 2001 and 2008.⁴ The Internal Revenue Service (IRS) sent the rebate checks on a schedule determined by the head-of-household’s social security number (SSN).⁵ Table 2 presents the dates on which checks were sent. We include in our sample all bankruptcies that were filed 30 weeks prior to the date that checks were sent, and 40 weeks after that date.⁶ In 2001, social security numbers were divided into ten equally-sized groups. Checks were mailed from the 20th of July through the 24th of September. The payments ranged from \$300–\$600.⁷ In 2008, households could elect to receive their stimulus payments via either check or direct deposit. As indicated in the third panel of Table 2, there were only three dates on which direct deposit transfers were made. Roughly 40 percent of households elected to receive their rebate checks via direct deposit (Parker et al., 2010). The rebate payments were higher in 2008 than in 2001, ranging from \$300–\$600 for single filers to \$600–\$1200 for couples.⁸

Table 3 summarizes the bankruptcy rates by SSN group. The first two columns present the average number of Chapter 7 and Chapter 13 bankruptcies per week in each group during the analysis period. In 2001, we observe an average of 1,466 chapter 7 bankruptcies per SSN group per week, and 486 chapter 13 bankruptcies per SSN group per week. The bankruptcy rates vary little across SSN groups. That pattern confirms the quasi-random assignment of SSN-group to household.⁹

Panel B of Table 3 shows similar summary statistics for bankruptcies in 2008. In contrast to 2001, 2008 bankruptcy rates vary starkly across SSN groups. That variation exists because SSN groups in 2008 were of different sizes. In order to test for random assignment, we tested that bankruptcy rates were equal in 2008 across two-digit SSN groups.¹⁰ Since the 2008 SSN

⁴Specifically, the rebates were mandated by the Economic Growth and Tax Relief Reconciliation Act of 2001 and the Economic Stimulus Act of 2008.

⁵Johnson et al. (2006) and Parker et al. (2010) describe in detail how the payments were distributed. Here we summarize the most relevant facts.

⁶We restrict the sample by time relative to when the checks were sent. This restriction leaves the same number of observations for each group. The results are qualitatively similar when we restrict by calendar time.

⁷Individual tax filers with no dependents could receive up to \$300 through the rebate, single parents a maximum of \$500, and married couples jointly filing could receive \$600. To receive the full amount, a single taxpayer had to have earned at least \$6,000 in taxable income in 2000 while a married couple jointly filing had to have earned at least \$12,000 in taxable income.

⁸If a filer’s 2007 tax return indicated over \$3,000 in qualifying income, the filer was eligible for at least the minimum payment based on the following general guidelines: \$300 to \$600 for individuals, \$600 to \$1,200 for joint filers, and \$300 for each qualifying child.

⁹We estimated ordinary least squares (OLS) regressions of weekly bankruptcies per group on SSN group and week indicator variables. The *F*-test fails to reject the null hypothesis that bankruptcy rates are equal across groups at the 1% level.

¹⁰Specifically, we ran OLS regressions of weekly bankruptcies per group on indicators for the last two digits of each filer’s SSN and week fixed effects. *F*-tests fail to reject the null hypothesis that bankruptcy rates are

groups were of different sizes, we include group-specific fixed effects in the regressions below.

Figure 2 presents the seasonal variation in bankruptcies in 2001 and 2008. There were more bankruptcies in 2001 than in 2008; we observe roughly 20,000 each week in 2001 versus 15,000 in 2008. That difference is likely driven by the 2005 passage of the BAPCPA (McIntyre et al., 2010; Evans and Lewis, 2008; GAO, 2008). Additionally, Figure 2 demonstrates that bankruptcies are more common during the first week of the month compared with later weeks. Mann and Porter (2010) attribute this pattern to liquidity constraints, arguing that households tend to file after receiving monthly paychecks.

3 Conceptual Framework

This section presents a simple model that describes how an increase in liquidity can affect bankruptcy rates. Under plausible assumptions, liquidity-constrained households are the only households that change their filing behavior as a result of the rebates. Such households can only file after receiving the rebates, leading to an increase in bankruptcy rates.

3.1 Model Assumptions

Consider the following three-period model. Households make two strategic decisions: (1) whether or not to file for bankruptcy and, (2) whether to file before or after they receive the rebates. In period 0, households borrow an exogenous amount of debt, B . We assume that debt is exogenous because of our empirical setting. All households eventually receive the rebate within a short window of time, so neither the amount nor maturity of their debt should depend on the timing of the rebates.

In period 1, households' wealth, $W \sim f(w)$, is realized. In addition, households anticipate receiving the rebate, with value I , in period 2. Households can decide to file in period 1, in period 2, or not at all. Households consume all of their wealth net of debt and bankruptcy costs at the end of period 2.¹¹

Households file for bankruptcy when it is financially beneficial to do so, even if households have the ability to repay their debts (Fay et al., 2002). Specifically, households decide whether and when to file by maximizing consumption in period 2 subject to liquidity constraints. If a household declares bankruptcy, it pays a fixed filing fee, c , and loses a share $1 - e$ of its wealth. The parameter e captures the generosity of the exemptions provided by the

equal across groups at the 1% level.

¹¹We assume no consumption takes place in period 1. Including consumption in period 1 would not qualitatively change our results. It would, however, introduce another mechanism whereby some low-wealth households that could technically afford to file would choose to file for bankruptcy in period 2 rather than in period 1 due to the high marginal utility of consumption in period 1.

bankruptcy court.¹² A larger value of e means that a larger share of the household's wealth is exempt and does not need to be turned over to the bankruptcy court during a bankruptcy filing. Once the household has filed for bankruptcy, it is absolved of its debts.¹³

A key assumption of the model involves how the bankruptcy court treats the filers' tax rebates. We assume that the tax rebate is treated the same whether the household files in period 1 or in period 2, and we further assume that the rebate is treated identically to the rest of the household's wealth. This assumption implies that households will not strategically manipulate their filing date to try to shield their rebate from the courts. The relevant case law broadly supports this assumption.¹⁴ Given the assumptions above, consumption is equal to $e \cdot (W + I - c)$ if a household decides to file for bankruptcy and $W + I - B$ otherwise.

3.2 Bankruptcy Filing Decisions

When deciding whether or not to file for bankruptcy, households face the following constraint. The filing fee, c , must be paid in advance, so it must be the case that $W > c$ if the household declares bankruptcy in period 1 and $W + I > c$ if the household declares bankruptcy in period 2. This assumption is particularly true for Chapter 7 filings. Court fees of approximately \$300 are paid in advance for both Chapter 7 and 13 filings. Legal fees for Chapter 7 are almost always paid in advance, while those for Chapter 13 are often paid gradually, through the filer's payment plan.

Household filing behavior depends on the level of realized wealth in period 1. We can divide households into several groups. Some households have sufficient wealth that they do not file for bankruptcy at all. Such wealthy households are those for which

$$W + I - B \geq e \cdot (W + I - c) \Rightarrow W \geq \frac{B - e \cdot c - I \cdot (1 - e)}{1 - e}. \quad (1)$$

Other households file for bankruptcy because it is financially advantageous to do so. The wealth of such households must satisfy two constraints. First, they are able to pay the filing fee both in period 1 and in period 2, thus $W > c$. Second, it is in their economic interest to

¹²In practice, exemptions are governed by both federal and state bankruptcy law. Exemption levels vary widely by state and have been relatively stable at the state level since the early twentieth century (Mahoney, 2010; Gropp et al., 1997).

¹³Bankruptcy in this model is a composite of Chapter 7 and Chapter 13 bankruptcy. While in practice Chapter 13 filers repay their debts based on a three to five year schedule, our framework can capture this by setting the present value of repayments to $1 - e$ times wealth net of legal fees.

¹⁴Several court cases (in re Rivera, in re Lambert, in re Howell, and in re Alguires) have established that for bankruptcies filed after the passage of the two stimulus acts, the tax rebates become property of the bankruptcy estate and are subject to normal rules governing other cash assets. If some households nonetheless choose to file before receiving their rebates in an attempt to prevent them from becoming part of the estate, then we would underestimate the percentage of constrained filers.

file for bankruptcy. Such households then have wealth that satisfies:

$$c < W < \frac{B - e \cdot c - I \cdot (1 - e)}{1 - e}. \quad (2)$$

These households are indifferent between filing at time 1 versus filing at time 2. Consistent with the characteristics of a typical bankruptcy, we assume that B is large relative to c so that there exist households within this range of wealth. Because B is large relative to c and the bankruptcy court treats the rebate as identical to other assets, a household that can pay its debts by definition can also afford the filing fee. Therefore, there is no incentive for an unconstrained household to manipulate its filing date. Any *change* in filing rates between period 1 and period 2 will not be due to such households.

Most importantly, there exist households whose wealth is less than their debts but who do not have enough wealth to file in period 1.¹⁵ We label such households liquidity-constrained households. They cannot borrow to pay the filing fee in period 1, and so must wait until period 2 to file for bankruptcy. By definition, then, such households have wealth that satisfies:

$$c - I < W < c. \quad (3)$$

These household can only afford to file in period 2.¹⁶

3.3 Predictions of the Model

The model implies that only liquidity-constrained households change the date of their bankruptcy based on the tax rebates. Such households can only afford to file *after* receiving their rebate checks.

The model also yields a direct interpretation of our empirical estimates. Let X be the share of households that are unconstrained and declare bankruptcy:

$$X = \int_c^{\frac{B - e \cdot c - I(1 - e)}{1 - e}} f(W) dW.$$

¹⁵The final type of household in the model is of little interest, given our empirical setting. Households with wealth $W < c - I$ have so little wealth that they cannot afford the filing fee either in period 1 or in period 2. These households will remain constrained and unable to file. They will be unaffected by the rebates and we will not observe them in the data.

¹⁶The value $c - I$ is non-negative as long as the costs of filing are greater than the value of the rebates. The value of the rebates were at most \$600 in 2001 and \$1,200 in 2008. In contrast, average bankruptcy costs are estimated at \$1,500 (Sullivan et al., 2001; GAO, 2008)

Let Y be the share of households that are unable to file at time 1 but can file at time 2:

$$Y = \int_{c-I}^c f(W)dW.$$

Since unconstrained filers are indifferent between filing in period 1 versus in period 2, we assume that half file in each period. The regressions below measure the percent change in bankruptcies after the tax rebates are sent. This empirical estimate, β , is the share of households filing in period 2 that are constrained filers. The model thus suggests that

$$\beta = \frac{Y}{\frac{1}{2} \cdot X}. \tag{4}$$

Finally, we relax one of the model’s key assumptions. Consistent with several legal decisions, the model assumes that courts garner the rebate checks as a part of the bankruptcy estate regardless of whether households file in period 1 or period 2. Suppose that some households are unaware of this and choose to file at period 1 in an effort to hide the rebates from the court. In that case, the share of households that are unconstrained and file at period 1 would be equal to $\gamma \cdot X$, where $\gamma > \frac{1}{2}$. In this case, the empirical estimates would equal:

$$\beta = \frac{Y - (1 - \gamma) \cdot X}{\gamma \cdot X} < \frac{Y}{\frac{1}{2} \cdot X}. \tag{5}$$

Thus, our empirical results would under-estimate the fraction of filers who are constrained. In this way, our regressions provide a lower bound.

In summary, the model suggests that only constrained households should be more likely to file after the rebates. The regressions below thus estimate the share of filers who are constrained. If we relax several assumptions, then the model suggests that our regressions provide a lower-bound estimate for this share.

4 The Effect of the Tax Rebates on Bankruptcies

This section presents our empirical results. We first describe how the bankruptcy rate changed after the tax rebates were distributed. We then describe how the treatment effect evolved over time.

4.1 The Change in the Bankruptcy Rate After the Rebates

The way in which both the 2001 and 2008 tax rebates were distributed lends itself to a simple difference-in-difference empirical framework. We construct aggregate counts of bankruptcies

by SSN group (g) and week (w), and estimate the following regression:

$$y_{gw} = \beta \cdot I\{\text{Rebate Check Sent}\}_{gw} + \alpha_0 + \alpha_g + \alpha_w + \varepsilon_{gw}.$$

The outcome y_{gw} is either the number of bankruptcies in group g and week w or its logarithm, and α_g and α_w are group and week fixed effects. Group fixed effects are unnecessary in 2001 since the SSN groups were of the same size. But in 2008, the SSN groups were of different sizes, so fixed effects are necessary.¹⁷

Panel A of Table 4 presents estimates of this regression for the 2001 rebates, while panel B presents the estimates for 2008. The first two columns show both the count and log specifications, and both suggest a significant increase in Chapter 7 filings after the rebates were distributed. In 2001, each SSN group experienced an average of 56 additional bankruptcies per week. The second column presents results when the logarithm of Chapter 7 bankruptcies is the dependent variable; the estimate indicates a 3.8 percent increase in bankruptcies after the rebates. Panel B demonstrates that this effect was slightly larger in 2008, with an increase of 59 bankruptcies per week, a 4.8 percent increase.

The 2001 and 2008 estimates in Table 4 are remarkably similar. A Wald test fails to reject the null hypothesis that the two point estimates are the same; its p -value is 0.386. The similarity of the estimates across years is surprising, since the BAPCPA dramatically changed both the bankruptcy system and filing rates in the intervening period (McIntyre et al., 2010). In 2008, both attorney fees and rebates were larger, the economy was experiencing a deeper recession, and several rules created by BAPCPA encouraged households to choose Chapter 13 rather than Chapter 7. It is unclear whether all of these changes together should imply a larger or smaller effect in 2008 versus 2001. Nonetheless, the similarity of the estimates suggests that liquidity constraints remain an important determinant of bankruptcy even after BAPCPA.

Table 4 presents clear evidence that the rebates had much less of an effect on Chapter 13 bankruptcies. Columns 3 and 4 present point estimates for Chapter 13 bankruptcies that are much smaller in magnitude than those for Chapter 7 and of the opposite sign. The estimates suggest a 1–2 percent decrease in Chapter 13 filings, a decrease that is marginally statistically significant in 2001 but not in 2008. As discussed above, this contrast between chapters is consistent with the existence of liquidity constraints. Households declaring Chapter 13 bankruptcy can postpone many of their legal fees, whereas households that declare Chapter

¹⁷The results for 2001 are insensitive to the inclusion of group fixed effects. When group fixed effects are included a joint F -test of the null hypothesis that all of the group fixed effects are zero is not statistically significant at conventional levels.

7 bankruptcy cannot.¹⁸

Finally, columns 5 and 6 of Table 4 present estimates for Chapter 7 and Chapter 13 filings combined. The point estimates, are positive and statistically significant at conventional levels. They suggest that consumer bankruptcy filings as a whole increased by 2.2 percent in 2001 and by 2.9 percent in 2008.¹⁹

Figure 3 presents the results of a simple falsification test. The points represent estimates from specifications identical to those in column 2 of Table 4, but which are estimated for each year in our sample. We focus on Chapter 7 filings since our main effect is only observed for Chapter 7 filings, and rely on the log-based specification in order to control for differences in filing rates across years. Tax rebates were *not* distributed by SSN group in years other than 2001 and 2008, but we construct indicator variables as if they were. Specifically, we construct placebo indicator variables consistent with the 2001 rebate distribution for years 1998 to 2004. For the years 2005 through 2008, we construct placebo indicator variables consistent with the 2008 rebate distribution. The point estimates for the actual rebate years are colored red, while placebo tests are blue. The figure presents no evidence of a strong rebate effect in any years other than those in which rebates were actually distributed. We observe a marginally significant, negative rebate effect in 2006. In all other cases, the confidence intervals for placebo years do not exclude zero. A joint test of the hypothesis that all estimates except those for 2001 and 2008 are equal to zero fails to reject the null hypothesis with a p -value of 0.136. In contrast, a joint test that the 2001 and 2008 estimates are jointly equal to zero leads to a p -value less than 0.001.

4.2 Variation in the Treatment Effect by Week

This section presents results that describe how filing rates evolved over the weeks surrounding the rebates. To measure such patterns, we estimate an event-study specification. We modify the regression equation above to include indicator variables for 2-week intervals over the 16 weeks prior and 23 weeks after the rebates. The 2 weeks before each group received its rebate is the omitted category.

Figure 4 presents the estimates from that regression when the outcome is the logarithm of Chapter 7 filings in 2001. The dotted lines plot 95% confidence intervals, and the solid line plots the point estimates. The figure demonstrates that the bankruptcy rate increased by roughly 4 percent 3 weeks after the rebates were distributed. The treatment effect decreased

¹⁸Appendix Table 2 presents similar estimates, though stratified on local homeownership rate and median income. The table presents no clear pattern in how the rebate effects varied by local characteristics.

¹⁹Appendix Table 1 presents similar estimates for 2008, but based solely on the direct deposit dates. It suggests a similar effect of the rebates.

monotonically after week 4. Figure 5 presents the same estimates for 2008 and demonstrates a similar pattern.

Figure 4 demonstrates an increase in filing rates 3 and 4 weeks before the checks are sent. That increase is marginally significant. In contrast, figure 5 suggests no pre-trend in 2008. We cannot identify a cause for the pre-trend in Figure 4. Potentially, households may have filed early, hoping to receive their rebates after their bankruptcy case was discharged. This, however, seems unlikely; bankruptcies generally last for months, and the judges were aware of the pending rebates.

Figures 6 and 7 present the same event-study estimates for Chapter 13 bankruptcies in 2001 and 2008. Nearly all of the point estimates are statistically indistinguishable from zero. Still, the figures suggest a general decline in Chapter 13 bankruptcies. That pattern is consistent with the results of Table 4.

As a whole, these figures suggest that the tax rebates led to a temporary increase in Chapter 7 bankruptcies. The increase in bankruptcies lasted for roughly 4 weeks after the rebates were distributed. We find suggestive evidence of an anticipatory increase in bankruptcies prior to the 2001 rebates, but no such evidence for 2008.

We interpret these results as evidence of a short-run, transitory effect of the rebates. We cannot identify households that did not receive a rebate, thus we cannot identify the long-run effects of the rebates. We suspect, however, that the rebates had little permanent effect on filing rates. That is, we interpret the increase in bankruptcies after the rebates as simply a shift of bankruptcies over time. We have two pieces of evidence in support of this interpretation. First, the pattern of event-study coefficients suggests the absence of a permanent effect; the estimated coefficients on the furthest lags are statistically and economically insignificant. Additionally, Appendix Table 3 reports results of an alternative specification that attempts to estimate the permanent effect of the rebates by comparing bankruptcy filings across months in different years. The test assumes that the permanent effect of the rebates can be estimated by comparing the total number of bankruptcies in the months during and after the tax rebate with the same months in other years, controlling for (within-year) seasonality in bankruptcy filings and controlling for long-run (across-year) trends in bankruptcy filings.²⁰ Consistent with the event-study figures, Appendix Table 3 shows no evidence of a permanent effect of the 2001 tax rebates.²¹

²⁰An important weakness of these regression results is that they assume that the timing of the rebate program itself is exogenous. This is unlikely to be true; the rebate program itself was a political response to macroeconomic conditions that themselves affect overall bankruptcy filings. Nevertheless, the similarity between the time-series results and the furthest lagged coefficients in the baseline model suggest no permanent effects of the rebates.

²¹Because we do not have enough post-2008 data, we only estimate the long-run effect of the 2001 tax rebate.

5 Discussion

The results above suggest that liquidity-constrained households delay filing for bankruptcy until they can afford the fees. Legal fees thus reduce the welfare of constrained households. But it is unclear whether a decrease in fees would increase overall social welfare.

The effect of fees on social welfare depends on whether liquidity-constrained filers are those with the largest or smallest utility gain from bankruptcy. If liquidity-constrained filers have the most to gain from bankruptcy, then entrance fees are likely to be socially inefficient.²² Conversely, if liquidity-constrained filers gain less from bankruptcy than other filers, then entrance fees may serve as an efficient mechanism to screen out inefficient bankruptcies. In this way, liquidity constraints transform entrance fees into ordeal mechanisms. And ordeal mechanisms are more likely to be socially efficient when “the costs they impose vary inversely with the benefits to be received” (Nichols and Zeckhauser, 1982).

A full assessment of bankruptcy filing fees is outside the scope of this paper.²³ Nevertheless, we speculate that liquidity-constrained households are those with the greatest return to filing. The theoretical framework in section 3 suggests that this is the case. As a result, courts could reduce the paperwork required for low-asset filers and thereby reduce the cost of filing, as advocated by Mann and Porter (2010). Such a policy would reduce the liquidity needed to file for bankruptcy.

6 Conclusion

We estimate that households are roughly three percent more likely to file for bankruptcy in the weeks following the tax rebates. Our theoretical model suggest that this is likely a conservative estimate of the share of households that cannot afford to file for bankruptcy at any given time.

These results emphasize the importance of liquidity constraints in the welfare analysis of the consumer bankruptcy system. Liquidity-constrained households may be those that would likely benefit most from an immediate discharge of debt, in which case the social insurance benefits from reduced filing fees would likely be large for this group of households. However, these potential social insurance benefits must be balanced against the costs of a more debtor-friendly bankruptcy system. A reduction in the costs of filing could lead to excessive borrowing and strategic filing.

²²The bankruptcy system can otherwise rely on exemptions and the seizure of assets to deter inefficient bankruptcies.

²³In addition to serving as a screening tool, filing fees may also reduce the incentive for households to accumulate debt. Our model, by contrast, treats debt as exogenous.

Two caveats are in order. First, we cannot directly estimate the long-run effects of the tax rebates. Second, we have not estimated the way in which filing fees might prevent inefficient bankruptcies. That is, we have estimated the cost of filing fees in deterring liquidity-constrained households from filing, but we have not estimated the potential benefits of fees. More research is needed.

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Figure 1: Bankruptcy Districts in Sample

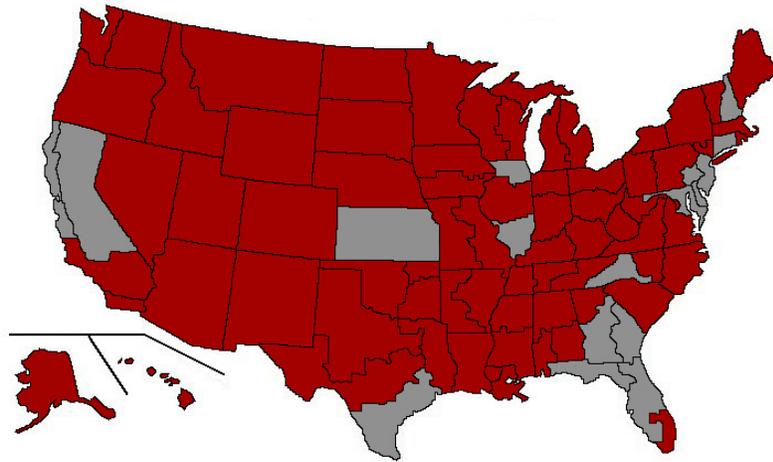


Figure 2. Total Number of Bankruptcy Filings

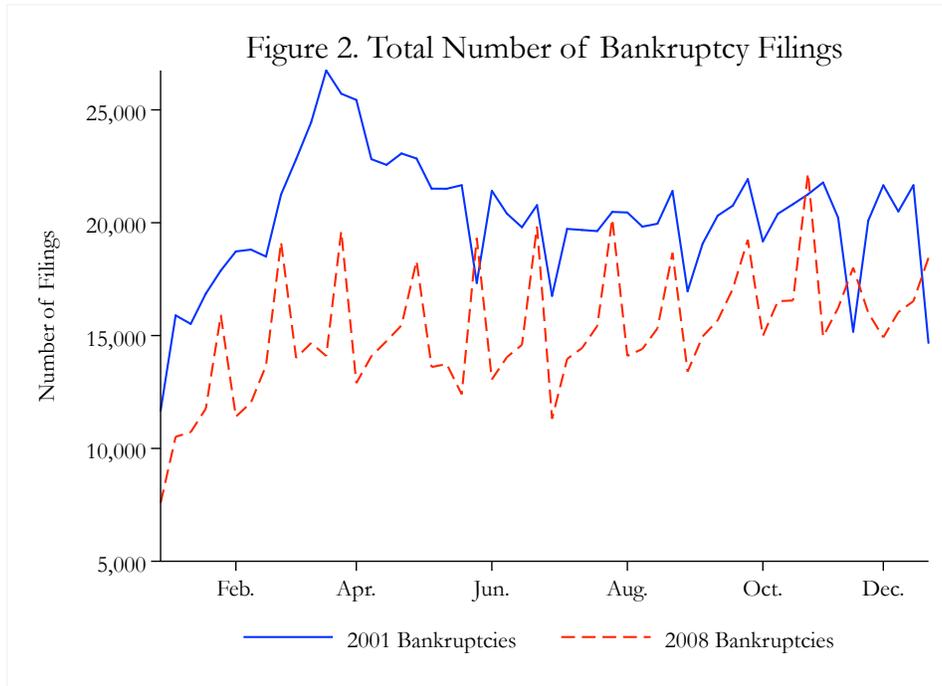


Figure 3. Chapter 7 Rebate Effect by Year

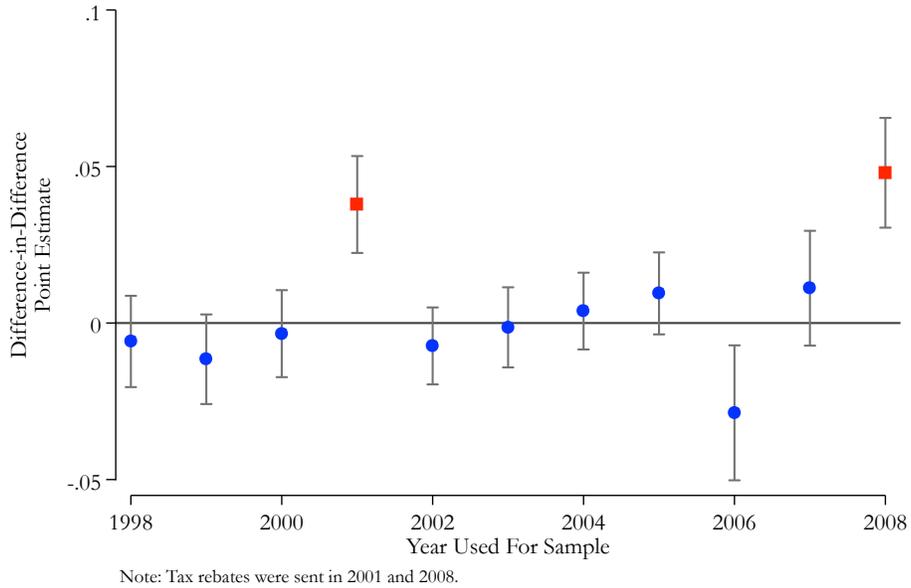
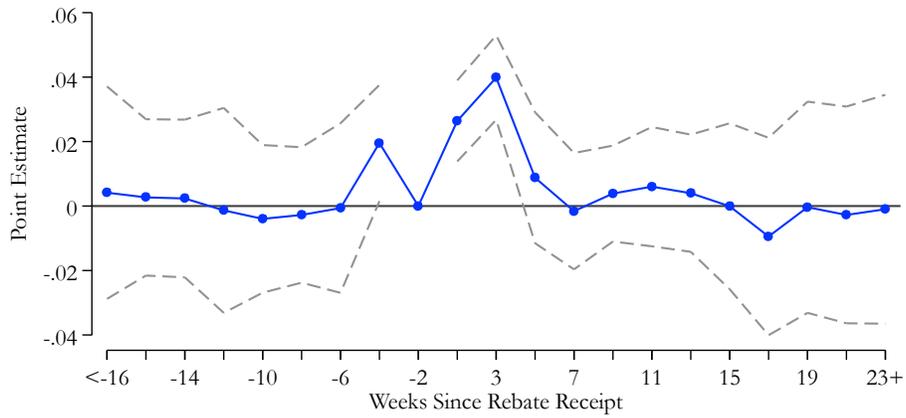
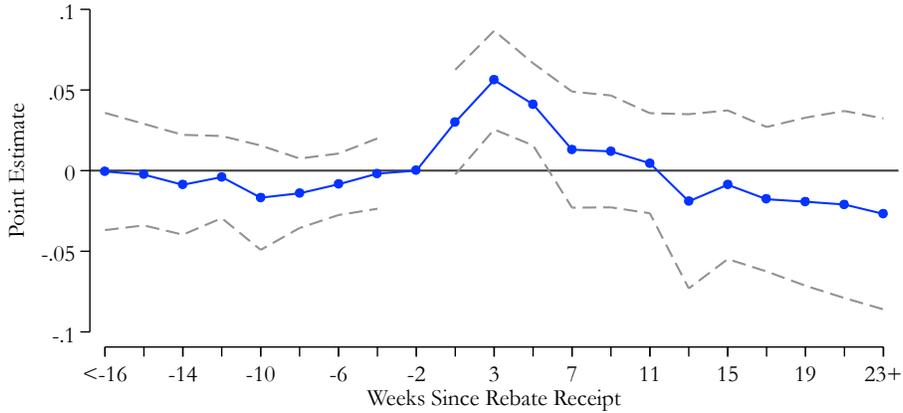


Figure 4. Event Study Point Estimates, 2001
Dependent Variable: Log of Chapter 7 Filings



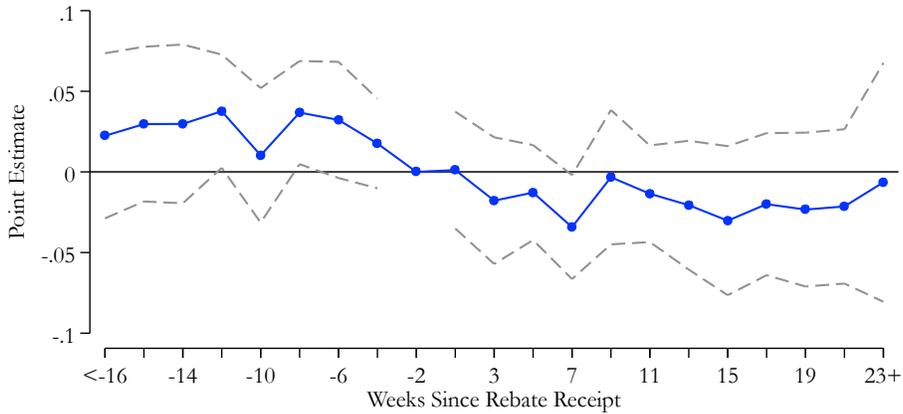
The figure presents point estimates from a regression of log counts of bankruptcies on indicators for two-week intervals. The dotted lines represent 95% confidence intervals that are robust to autocorrelation between observations from the same SSN group. The sample consists of bankruptcies by SSN group and week, covering 30 weeks before and 40 weeks after groups were sent their tax rebate checks. SSN-group fixed effects and week fixed effects not shown. The omitted time period is 1 and 2 weeks before rebate checks were sent.

Figure 5. Event Study Point Estimates, 2008
 Dependent Variable: Log of Chapter 7 Filings



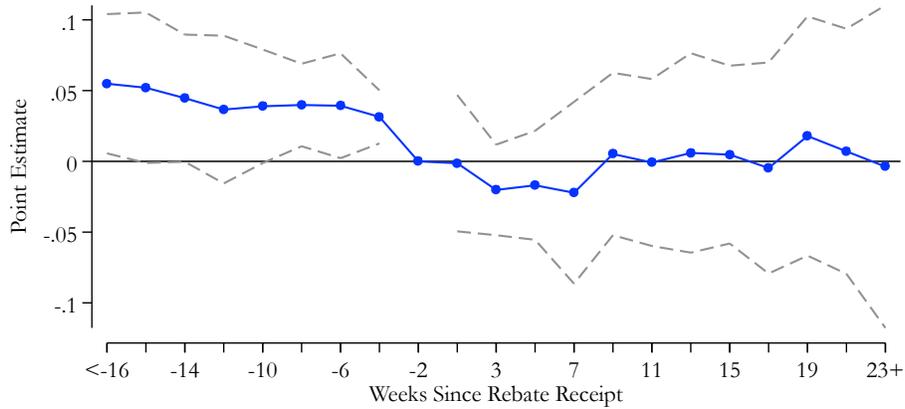
The figure presents point estimates from a regression of log counts of bankruptcies on indicators for two-week intervals. The dotted lines represent 95% confidence intervals that are robust to autocorrelation between observations from the same SSN group. The sample consists of bankruptcies by SSN group and week, covering 30 weeks before and 40 weeks after groups were sent their tax rebate checks. SSN-group fixed effects and week fixed effects not shown. The omitted time period is 1 and 2 weeks before rebate checks were sent.

Figure 6. Event Study Point Estimates, 2001
 Dependent Variable: Log of Chapter 13 Filings



The figure presents point estimates from a regression of log counts of bankruptcies on indicators for two-week intervals. The dotted lines represent 95% confidence intervals that are robust to autocorrelation between observations from the same SSN group. The sample consists of bankruptcies by SSN group and week, covering 30 weeks before and 40 weeks after groups were sent their tax rebate checks. SSN-group fixed effects and week fixed effects not shown. The omitted time period is 1 and 2 weeks before rebate checks were sent.

Figure 7. Event Study Point Estimates, 2008
 Dependent Variable: Log of Chapter 13 Filings



The figure presents point estimates from a regression of log counts of bankruptcies on indicators for two-week intervals. The dotted lines represent 95% confidence intervals that are robust to autocorrelation between observations from the same SSN group. The sample consists of bankruptcies by SSN group and week, covering 30 weeks before and 40 weeks after groups were sent their tax rebate checks. SSN-group fixed effects and week fixed effects not shown. The omitted time period is 1 and 2 weeks before rebate checks were sent.

Table 1: Sample Coverage

	Districts in our sample	Other districts	National	Coverage in our sample
		<u>A. June-September 2001</u>		
Consumer bankruptcies	259,961	90,020	349,981	74%
Chapter 7	186,229	58,484	244,713	76%
Chapter 13	73,613	31,487	105,100	70%
Population	256,785,589	20,232,033	277,017,622	93%
Median Family Income	40,974	50,902	41,947	
Unemployment Rate	4.58%	3.86%	4.51%	
Percent College	24.6%	29.9%	25.1%	
Median Housing Value	125,267	148,352	127,530	
		<u>B. May-July 2008</u>		
Consumer bankruptcies	272,182	90,559	362,741	75%
Ch 7	183,788	58,740	242,528	76%
Ch 13	88,208	31,706	119,914	74%
Total population	282,566,992	21,492,736	304,059,728	31%
Median Family Income	50,859	63,537	52,102	
Unemployment Rate	5.34%	4.98%	5.31%	
Percent College	26.8%	32.5%	27.4%	
Median Housing Value	205,233	277,580	212,325	

Table 2. Dates When Rebate Checks Were Sent

Last 2 Digits of SSN's	2001 Rebate Check Sent	Last 2 Digits of SSN's	2008 Stimulus Check Sent	Last 2 Digits of SSN's	2008 Stimulus Deposit Made
00 – 09	20-Jul	00 – 09	16-May	00 – 20	2-May
10 – 19	27-Jul	10 – 18	23-May	21 – 75	9-May
20 – 29	3-Aug	19 – 25	30-May	76 – 99	16-May
30 – 39	10-Aug	26 – 38	6-Jun		
40 – 49	17-Aug	39 – 51	13-Jun		
50 – 59	24-Aug	52 – 63	20-Jun		
60 – 69	31-Aug	64 – 75	27-Jun		
70 – 79	7-Sep	76 – 87	4-Jul		
80 – 89	14-Sep	88 – 99	11-Jul		
90 – 99	21-Sep				

Table 3: Average Bankruptcies by SSN Group

Last 2 Digits of SSN's	Chapter 7 bankruptcies	Chapter 13 bankruptcies	Total bankruptcies
<u>A. 2001 Tax Rebates</u>			
00-09	1,445	483	1,928
10-19	1,451	483	1,934
20-29	1,443	483	1,926
30-39	1,458	486	1,945
40-49	1,464	486	1,950
50-59	1,473	486	1,960
60-69	1,471	488	1,959
70-79	1,487	485	1,972
80-89	1,480	486	1,966
90-99	1,499	493	1,991
Average	1,466	486	1,952
<u>B. 2008 Tax Rebates</u>			
00-09	1,030	452	1,482
10-18	937	408	1,345
19-25	743	322	1,065
26-38	1,359	584	1,943
39-51	1,377	588	1,965
52-63	1,288	548	1,835
64-75	1,299	547	1,846
76-87	1,296	549	1,846
88-99	1,308	552	1,861
Average	1,187	508	1,695

Table 4: The Effect of Rebate Checks on Bankruptcies
 Dependent Variable: Level or logarithm of total bankruptcy filings
 per SSN group per week

	(1)	(2)	(3)	(4)	(5)	(6)
	Chapter 7		Chapter 13		All	
	Levels	Logs	Levels	Logs	Levels	Logs
	<u>A. 2001 Tax Rebates</u>					
After	56.399	0.038	- 11.600	- 0.023	44.803	0.022
Check	(10.798)	(0.008)	(5.068)	(0.010)	(13.811)	(0.007)
Receipt	[0.001]	[0.001]	[0.048]	[0.047]	[0.010]	[0.012]
R ²	0.972	0.974	0.909	0.909	0.973	0.976
N	710	710	710	710	710	710
	<u>B. 2008 Tax Rebates</u>					
After	59.394	0.048	- 3.388	- 0.014	56.006	0.029
Check	(7.627)	(0.009)	(6.122)	(0.011)	(9.006)	(0.007)
Receipt	[0.000]	[0.001]	[0.595]	[0.250]	[0.000]	[0.004]
R ²	0.977	0.991	0.961	0.974	0.980	0.994
N	639	639	639	639	639	639

Note: The sample consists of counts of bankruptcies by SSN group and week, covering 30 weeks before and 40 weeks after groups were sent their tax rebate checks. The standard errors in parentheses are robust to autocorrelation between observations from the same SSN group. The associated *p*-values are in brackets. SSN-group fixed effects and week fixed effects not shown.

Appendix Table 1: The Change in Bankruptcies in 2008 After Direct Deposit Dates
 Dependent Variable: Level or logarithm of total bankruptcy filings
 per SSN group per week

	(1)	(2)	(3)	(4)	(5)	(6)
	Chapter 7		Chapter 13		All	
	Levels	Logs	Levels	Logs	Levels	Logs
After	167.000	0.058	- 50.900	- 0.032	116.000	0.033
Direct	(8.516)	(0.010)	(54.274)	(0.018)	(60.615)	(0.009)
Deposit	[0.003]	[0.030]	[0.447]	[0.225]	[0.195]	[0.067]
R^2	0.967	0.998	0.978	0.996	0.975	0.999
N	213	213	213	213	213	213

Note: The sample consists of counts of bankruptcies by SSN group and week, covering 30 weeks before and 40 weeks after groups were sent their tax rebate checks. The standard errors in parentheses are robust to autocorrelation between observations from the same SSN group. The associated p -values are in brackets. SSN-group fixed effects and week fixed effects not shown.

Appendix Table 2: The Effect of Rebate Checks by Local Characteristics
 Dependent Variable: Level or logarithm of total bankruptcy filings
 per SSN group per week

	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)
	Bankruptcies stratified by zip code homeownership rate			Bankruptcies stratified by median family income in zip code		
	First Tercile	Second Tercile	Third Tercile	First Tercile	Second Tercile	Third Tercile
	<u>A. 2001 Tax Rebates</u>					
After Check Receipt	0.028 (0.011) [0.027]	0.029 (0.015) [0.082]	0.057 (0.010) [0.000]	0.048 (0.015) [0.009]	0.025 (0.014) [0.113]	0.043 (0.015) [0.017]
R^2	0.934	0.930	0.928	0.933	0.944	0.908
N	710	710	710	710	710	710
	<u>B. 2008 Tax Rebates</u>					
After Check Receipt	0.041 (0.022) [0.104]	0.042 (0.019) [0.055]	0.059 (0.012) [0.001]	0.051 (0.023) [0.060]	0.050 (0.012) [0.004]	0.043 (0.013) [0.012]
R^2	0.970	0.976	0.977	0.969	0.977	0.975
N	639	639	639	639	639	639

Note: The sample consists of counts of bankruptcies by SSN group and week, covering 30 weeks before and 40 weeks after groups were sent their tax rebate checks. The standard errors in parentheses are robust to autocorrelation between observations from the same SSN group. The associated p -values are in brackets. SSN group fixed effects and week fixed effects not shown.

Appendix Table 3: The Long-Run Effect of the 2001 Rebates
 Dependent Variable: Log of chapter 7 bankruptcies by month

	(1)	(2)	(3)	(4)	(5)
After 2001 Tax Rebates	0.000 (0.039) [1.000]	- 0.004 (0.050) [0.937]	- 0.017 (0.050) [0.743]	0.006 (0.030) [0.844]	- 0.033 (0.031) [0.283]
R^2	0.660	0.661	0.666	0.908	0.938
N	84	84	84	84	84
Cubic polynomial in time	X				
Quartic polynomial in time		X			
Quintic polynomial in time			X	X	
Month fixed effects				X	X
Year fixed effects					X

Note: This table reports estimates of a regression of log bankruptcies on an indicator variable for the period between June 2001 through March 2002. That period covers two months before the 2001 tax rebates and six months after. The sample includes the months between January 1998 and December 2004, and the unit of observation is month. The polynomials are functions of the number of months since the start of the sample period, and are intended to capture long-run trends in bankruptcy filings. Heteroskedasticity-robust standard errors are in parentheses, and associated p -values are in brackets.