

THE TICKET TO EASY STREET? THE FINANCIAL CONSEQUENCES OF WINNING THE LOTTERY

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Abstract—This paper examines whether giving large cash transfers to financially distressed people causes them to avoid bankruptcy. A comparison of Florida Lottery winners who randomly received \$50,000 to \$150,000 to small winners indicates that such transfers only postpone bankruptcy rather than prevent it, a result inconsistent with the negative shock model of bankruptcy. Furthermore, the large winners who subsequently filed for bankruptcy had similar net assets and unsecured debt as small winners. Thus, our findings suggest that skepticism regarding the long-term impact of cash transfers may be warranted.

I. Introduction

DURING economic downturns, an important question governments face is whether and how to help individuals who are struggling financially. The central issue in determining the appropriate policy is whether the assistance will have a permanent impact or will merely postpone financial distress. The goal of this paper is to determine whether the simplest solution to helping indebted individuals—giving them cash—contributes to their longer-term financial stability and helps them avoid bankruptcy. In doing so, this paper also offers insight into the long-running debate about whether bankruptcy is caused by negative shocks or by strategic or even myopic behavior (Fay, Hurst, & White, 2002; Himmelstein et al., 2009; White, 2006).

While it might seem unambiguous that cash transfers that are large relative to debt should prevent bankruptcy, there are reasons to be doubtful. For example, individuals may simply have high discount rates that lead them to consume the resources in the short run.¹ Individuals may also engage in mental accounting (Thaler, 1990), treat the cash as “house money” and use it to take on additional risks (Thaler & Johnson, 1990), make consumption commitments that make it more difficult to overcome future negative income shocks (Chetty & Szeidl, 2007; Zhu, forthcoming), or develop a taste for luxury goods that outlasts the money. Finally, individuals may lack the knowledge to handle large

amounts of cash wisely; surveys have consistently shown that U.S. adults have relatively low levels of financial literacy (Higert, Hogarth, & Beverly, 2003; Lusardi & Mitchell, 2007). The perceived importance of these considerations has been partly responsible for the shift in the legal field from lump-sum payments to structured settlements,² a trend that Pryor (2002) states is “perhaps the most striking development in the tort payment structure over the last 25 years.” However, to our knowledge the only research on the general question of whether large cash transfers improve the longer-term financial outcomes of struggling individuals consists of informal surveys of lump-sum settlement recipients.

To estimate the impact of large cash transfers on financial distress, we apply a straightforward research design to a unique data set. Specifically, we link winners of the Florida Lottery to bankruptcy records and compare recipients of \$50,000 to \$150,000 to those who won less than \$10,000. By exploiting the randomness of the lottery, we can distinguish the effect of cash transfers from confounding factors typically associated with receipt of such awards. We rely on the identifying assumption that conditional on winning for the first time, the amount won is uncorrelated with the recipients’ underlying propensity for bankruptcy. Tests support this assumption: we find no difference in either the demographic characteristics or the bankruptcy rates of large winners versus small winners in the years prior to winning the lottery.

The results indicate that giving \$50,000 to \$150,000 to people only postpones bankruptcy. Specifically, while these recipients are 50% less likely than small winners to file for bankruptcy immediately after winning, they are more likely to file for bankruptcy three to five years after winning. Furthermore, bankruptcy petitions filed in the five years after winning reveal that the net assets and unsecured debt of large winners are no different from those of small winners. This implies that although the median winner of a large cash prize could have paid off all of his unsecured debt or increased equity in new or existing assets, he did neither. Bankruptcy records also yield little evidence that large winners later filed for bankruptcy due to increased housing consumption commitments or in order to game the unlimited homestead exemption in Florida bankruptcy law, suggesting that the recipients consumed their winnings.

Received for publication October 4, 2009. Revision accepted for publication March 19, 2010.

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We thank David Albouy, Scott Carrell, Stefano DellaVigna, Robert Frank, Robert Lawless, Jeremy Tobacman, Glen Waddell, two anonymous referees, and seminar participants at Cornell University, the Federal Reserve Bank of Boston, the University of California–Berkeley, the University of California–Davis, the University of California–Santa Barbara, the University of Pennsylvania, the University of Texas at Arlington, Vanderbilt University, and the 2009 AEA Annual Conference and 2009 NBER Summer Institute for helpful comments. We also thank Susan Carter for providing excellent research assistance and Vanderbilt Law School’s Law and Human Behavior Program for providing financial assistance.

¹ This behavior could be rational, or it could be at odds with the long-run selves’ preference against spending in the short run. For more on the latter, see DellaVigna (2009); Frederick, Loewenstein, and O’Donoghue (2002), and O’Donoghue and Rabin (1999).

² This concern is reflected by the words of Judge Joseph Weiss of the U.S. Court of Appeals for the Third Circuit: “Lump-sum payments all too often are improvidently invested or squandered by unsophisticated recipients and so fail to provide for the lifetime of medical bills and unemployment faced by victims of serious injury.” Judge Weiss also called the reliance on lump-sum awards one of the “enduring weaknesses of the common law tort system” (*Jacquette v. Continental*, 1999).

Since the large cash transfers received were sufficiently large to undo any negative shocks that previously occurred, we interpret our findings as inconsistent with the negative shock model of bankruptcy. In addition, our results indicate that policymakers should be cautious in offering cash assistance to heavily indebted individuals with the hope of increasing their longer-term financial security.

II. Data

Data on lottery winners were obtained from the Florida Lottery. The data include every winner of the Fantasy 5 lottery game in Florida from April 29, 1993, through November 27, 2002. These winners represent all individuals who won more than \$600, the minimum amount for which federal law mandates that records be kept and reported to the Internal Revenue Service. For each lottery winner, we observed the individual's name and home ZIP code, the amount won (which we adjust for inflation), and the date of the drawing. While the amounts observed represent pretax winnings, the Internal Revenue Service requires that the Florida Lottery withhold 25% of amounts greater than \$5,000.

Because we ultimately link bankruptcy records to winners using their first and last names and county of residence, we attempt to identify the set of unique names so as to minimize the number of individuals falsely linked to bankruptcy. Toward that end, we exclude all names that appeared more than once in 2008 phone records for that county. In addition, if lottery records indicated that an individual with a unique name from a given county won more than once, we then use only the first time that individual won.³ We also limit the sample to individuals who won less than \$150,000 since only 153 Fantasy 5 winners won more than that during this time period. The impact of these exclusions is to reduce the sample of Fantasy 5 winners from 56,160 to 34,987.⁴

Bankruptcy records were obtained from the Public Access to Court Electronic Records database (PACER) maintained by the Administrative Office of the U.S. Courts. In total, there were 1,433,243 personal bankruptcy records filed in Florida from 1985 to November 27, 2007. These records represent all of the Chapter 7 and Chapter 13 personal bankruptcy petitions filed in the three district U.S. bankruptcy courts in Florida. While we note that not all petitions were approved by bankruptcy judges, for ease of exposition we subsequently refer to winners' bankruptcy rates rather than the more cumbersome "bankruptcy filing rates."

Included in the data are the first and last name of the filer, along with his or her residential address, the date filed, and

³ Results are unchanged when these individuals are excluded from the analysis.

⁴ Importantly, the proportion of individuals with unique names is uncorrelated with amount won. For example, 3.5% of the full sample of winners won between \$50,000 and \$150,000, compared to 3.5% of first-time winners with unique names.

TABLE 1.—LOTTERY PLAYERS LINKED TO BANKRUPTCY PETITIONS

| Amount Won | No Bankruptcy | Bankruptcy | % Bankruptcy |
|---|---------------|------------|--------------|
| A. Winners Linked to Bankruptcy 0 to 2 Years after Winning | | | |
| <\$1,000 | 4,742 | 146 | 2.99 |
| \$1,000–\$10,000 | 9,465 | 315 | 3.22 |
| \$10,000–\$25,000 | 9,754 | 147 | 1.48 |
| \$25,000–\$50,000 | 9,069 | 137 | 1.49 |
| \$50,000–\$100,000 | 1,054 | 11 | 1.03 |
| \$100,000–\$150,000 | 146 | 1 | 0.68 |
| Total | 34,230 | 757 | 2.16 |
| B. Winners Linked to Bankruptcy 3 to 5 Years after Winning | | | |
| <\$1,000 | 4,767 | 121 | 2.48 |
| \$1,000–\$10,000 | 9,482 | 298 | 3.05 |
| \$10,000–\$25,000 | 9,540 | 361 | 3.65 |
| \$25,000–\$50,000 | 8,861 | 345 | 3.75 |
| \$50,000–\$100,000 | 1,018 | 47 | 4.41 |
| \$100,000–\$150,000 | 142 | 5 | 3.40 |
| Total | 33,810 | 1,177 | 3.36 |
| C. Winners Linked to Bankruptcy 0 to 5 Years after Winning | | | |
| <\$1,000 | 4,621 | 267 | 5.46 |
| \$1,000–\$10,000 | 9,167 | 613 | 6.27 |
| \$10,000–\$25,000 | 9,393 | 508 | 5.13 |
| \$25,000–\$50,000 | 8,724 | 482 | 5.24 |
| \$50,000–\$100,000 | 1,007 | 58 | 5.45 |
| \$100,000–\$150,000 | 141 | 6 | 4.08 |
| Total | 33,053 | 1,934 | 5.53 |

the chapter under which the bankruptcy case was filed. In addition, we obtained more detailed data from bankruptcies filed between January 1, 2004, and November 27, 2007, since this information was available electronically. These data are discussed in more detail in section VI.

Bankruptcy represents an important outcome for several reasons. First, filing for bankruptcy is arguably the most extreme signal of financial distress. In addition, preventing bankruptcy may be socially desirable both because it is bad for creditors and because, by affecting a filer's credit score, it can affect the availability and price of future consumer loans as well as the person's employment prospects.

The lottery winners were linked to bankruptcy filings on the basis of first and last name and county of residence, with results shown in table 1. Each winner was linked to any bankruptcy case filed up to five years prior to winning the lottery and within five years after winning the lottery. In all, 1,934 Fantasy 5 winners were linked to a bankruptcy in the five years after winning. This match implies a one-year bankruptcy rate among lottery players of just over 1%, which is similar to the filing rate of 1.0% for all adults in Florida from 1993 through 2001.⁵

While it is possible that type I or type II errors were made in linking lottery winners to bankruptcy records, neither type of error should invalidate the research design. Due to the randomness with which amount won is determined, we should be no more or less likely to match winners of large sums than winners of small sums except for the causal effect of amount received on bankruptcy rates.

⁵ U.S. Census and authors' calculations.

III. Fantasy 5 and Identification Strategy

To identify the effect of large cash transfers, we compare the bankruptcy rates of large cash prize recipients to those of small prize recipients. This strategy is similar to those employed in other papers to examine the effect of income shocks on health and mortality (Lindahl, 2005) and on labor earnings, savings, and consumption (Imbens, Rubin, & Sacerdote, 2001). The identifying assumption in our analysis is that conditional on winning at least \$600 in Fantasy 5 for the first time, the amount won is uncorrelated with underlying propensity for bankruptcy. We emphasize that we focus only on the first time an individual is observed to win rather than assuming whether an individual ever wins a large prize (conditional on winning \$600 or more at least once) is random, since the latter would clearly depend on frequency of play.

In order to gauge the validity of our identifying assumption, some background regarding the Fantasy 5 game is necessary. Fantasy 5 is a parimutuel lottery game in which the amount won depends on how many numbers were matched, how many winning tickets were sold, how many people played, and the structure of the game. From April 29, 1993, through July 15, 2001, individuals who matched five of five numbers won an average of \$20,000, though the actual amount varied from \$1,300 to \$132,000. Beginning on July 16, 2001, the game changed such that the average amount won for matching five numbers increased to \$120,000. On days in which no one matched five of five numbers, people who matched four numbers won an average of \$900. Consequently, because the number of small and large winners changed over time, it is important for our main analysis to control for that as well as for year fixed effects. Finally, while it is possible for individuals to play up to ten times on each card, no lottery winners in the data played the same five numbers multiple times. This implies that although some people are more likely to enter our data than others (those who play the lottery more frequently or play more numbers on a card), conditional on winning \$600 the amount won is unaffected by the number of plays paid for on a given card. Thus, while we are unable to know whether the response of frequent lottery players observed in this study extends to other populations,⁶ we are confident that our approach will yield internally valid estimates.

An important advantage of this identification strategy is that it can be empirically tested in two ways. First, in results available on request, we show that amount won is not explained by winners' neighborhood characteristics. Second, and more important, we show that recipients of large cash prizes were no more or less likely to file for bankruptcy before they won than were recipients of small cash prizes. This implies that except for the difference in amount

won, we would not expect bankruptcy rates to differ systematically after winning the lottery either. Collectively these tests suggest that any difference between the postwinning bankruptcy rates of large winners and small winners is properly interpreted as the causal effect of the lottery winnings.

IV. Methodology

Given the intuitive research design, the simplest way to determine the effect of receiving large cash transfers is to compare large prize winners to small prize winners. In addition to comparing the bankruptcy rates of these groups graphically before and after winning the lottery, we also do so using ordinary least squares regression. Specifically, we estimate:

$$\begin{aligned} \text{Bankruptcy}_i = & a_i + \beta_0(\text{After Change in Game Structure})_i \\ & + \beta_1(\$10,000 \leq \text{Amount} < \$50,000)_i \\ & + \beta_2(\$50,000 \leq \text{Amount} < \$150,000)_i + \varepsilon_i, \end{aligned}$$

where Bankruptcy_i is a dummy variable equal to 1 if individual i filed for bankruptcy within a given number of years after winning, a_i is a set of fixed effects for the year in which the individual won, $(\text{After Change in Game Structure})_i$ is an indicator equal to 1 if the individual won after the structure of the game was changed on July 16, 2001, and the remaining variables are indicators for various ranges of amounts won, where the excluded group is less than \$10,000. While one may object that winning \$10,000 may have its own effect on bankruptcy rates, we choose that as the cutoff because prior to July 16, 2001, there were relatively few winners of less than \$3,000. However, in section VC, we show that the results are robust to using smaller cash prizes as the omitted group.

Finally, for ease of exposition, we hereafter refer to recipients of less than \$10,000 as small winners, winners of \$10,000 to \$50,000 as medium winners, and winners of \$50,000 to \$150,000 as large winners.

V. Results

A. Tests of the Identification Strategy

To demonstrate that the size of the income shock is random and thus uncorrelated with underlying financial well-being, we provide two tests. First, we check whether the amount won is explained by the winners' neighborhood characteristics. Specifically, we regress the amount won on thirteen variables measuring ZIP code income, race, gender, marital status, and educational attainment and find that only one is significant at the 5% level.⁷ More important, all

⁶ For example, while Kearney (2005) reports that frequency of lottery play is approximately equal across the income distribution, we have no way of knowing whether lottery players differ from other populations of interest in unobserved ways, such as discount rates or risk preferences.

⁷ That variable is median household income, the coefficient of which implies that a \$10,000 increase in neighborhood income is associated with a prize that is \$400 smaller, which is quite small relative to the prizes examined in this paper.

TABLE 2.—EFFECT OF WINNING THE LOTTERY ON BANKRUPTCY RATES

| | Falsification Test | | Main Effects | | |
|--|---------------------|--|------------------------|------------------------|------------------------|
| | (1) | (2) | (3) | (4) | (5) |
| A. Bankruptcy Rate in 2 Years Before Winning | | Bankruptcy Rate within 2 Years after Winning | | | |
| Won \$10,000–\$50,000 | –0.0006 (0.0036) | –0.0166*** (0.0016) | –0.0086** (0.0038) | –0.0106*** (0.0033) | –0.0087** (0.0038) |
| Won \$50,000–\$150,000 | 0.0041 (0.0046) | –0.0215*** (0.0043) | –0.0160*** (0.0050) | –0.0176*** (0.0048) | –0.0163*** (0.0050) |
| B. Bankruptcy Rate 3 to 5 Years Before Winning | | Bankruptcy Rate 3 to 5 Years after Winning | | | |
| Won \$10,000–\$50,000 | 0.0041 (0.0039) | 0.0084*** (0.0020) | 0.0040 (0.0047) | 0.0081** (0.0041) | 0.0050 (0.0047) |
| Won \$50,000–\$150,000 | –0.0002 (0.0051) | 0.0143*** (0.0054) | 0.0113* (0.0062) | 0.0143*** (0.0059) | 0.0121** (0.0062) |
| C. Bankruptcy Rate 0 to 5 Years Before Winning | | Bankruptcy Rate within 5 Years after Winning | | | |
| Won \$10,000–\$50,000 | 0.0035 (0.0052) | –0.0082*** (0.0025) | –0.0046 (0.0059) | –0.0025 (0.0051) | –0.0036 (0.0060) |
| Won \$50,000–\$150,000 | 0.0040 (0.0068) | –0.0072 (0.0068) | –0.0047 (0.0078) | –0.0034 (0.0075) | –0.0042 (0.0078) |
| Number of observations | 34,987 | 34,987 | 34,987 | 34,987 | 34,987 |
| Controls for change in game structure? | Yes | No | Yes | No | Yes |
| Includes year fixed effects? | Yes | No | No | Yes | Yes |

Effects reported are relative to winning less than \$10,000. Standard errors are in parentheses. *, **, ***Significant at the 10%, 5%, and 1% levels, respectively.

thirteen variables explain only 0.1% of the total variation in amount won.

Second, we examine the extent to which filing for bankruptcy prior to winning the lottery is predicted by the amount later won. So long as the amount won is uncorrelated with one’s underlying propensity to file for bankruptcy, there should be no difference between the bankruptcy rates of individuals who later win large or small cash prizes.

Results shown in column 1 of table 2 indicate that there is no correlation between amount won and bankruptcy rates prior to winning the lottery.⁸ This similarity between large and small winners can also be seen in figure 1, which plots residual flows into bankruptcy before and after winning after removing year fixed effects. Thus, the results are supportive of the identifying assumption that the amount won is uncorrelated with one’s underlying propensity for bankruptcy.

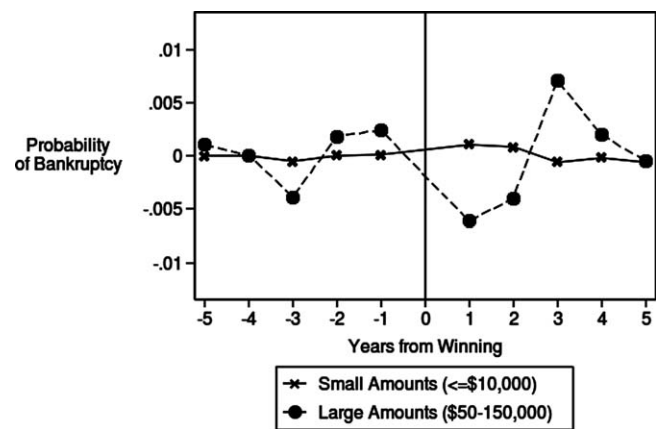
B. The Effect of Lottery Winnings on Bankruptcy Rates

We now turn to estimating the impact of receiving large cash prizes on future bankruptcy rates. As shown in figure 1, large winners are much less likely to file for bankruptcy in the two years after winning. This pattern reverses three to five years after winning, however: during this time, large winners are more likely to file for bankruptcy than are small winners.

To investigate this pattern more rigorously, we estimate the impact of winning large lump sums on bankruptcy rates

⁸ Without controlling for either year or game fixed effects, large winners are statistically less likely to file for bankruptcy before winning. This is most likely due to the game change in 2001, which shifted the relative number of large versus small winners, leaving them exposed to different macroeconomic forces.

FIGURE 1.—FLOWS INTO BANKRUPTCY BEFORE AND AFTER WINNING THE LOTTERY (AFTER REMOVING YEAR FIXED EFFECTS)



within two years, from three to five years, and within five years after winning. Results are shown in table 2, where column 2 shows unconditional differences, column 3 controls for the change in the game structure, column 4 controls for year fixed effects, and column 5 controls for both the change in the game structure and year fixed effects. Consistent with figure 1, we find statistically significant decreases in bankruptcy rates in the two years after winning, a result that is robust across all of the specifications. Our preferred specification in column 4 shows that the bankruptcy rates of medium and large winners fall 0.87 ($p = 0.023$) and 1.63 ($p = 0.001$) percentage points in the first two years, respectively, which represent relative declines of 27% and 50%. These declines are offset, however, by increases of 0.5 ($p = 0.287$) and 1.21 ($p = 0.049$) percentage points three to five years after winning. The net result is that within five years after winning, medium and large winners are no more or

less likely to file for bankruptcy than are small winners. This is true despite the fact that the median large winner won a cash prize (\$65,000) that was sufficient to pay all of the unsecured debt owed by the most financially distressed lottery players (\$49,000) at the time of winning.⁹

In order to show that this pattern is not driven by the admittedly arbitrary definitions of small, medium, and large winners, we also show how bankruptcy rates over these time periods vary across the full distribution of earnings. Figure 2 shows the bankruptcy rates of all individuals within two years, from three to five years, and within five years of winning the lottery. The graphical evidence is consistent with the results in table 3: winners of larger prizes experience a short-term drop in the bankruptcy rates, followed by an increase of similar magnitude three to five years after winning. Thus, our results indicate that large cash transfers only postpone, rather than prevent, bankruptcy.

C. Robustness of the Results

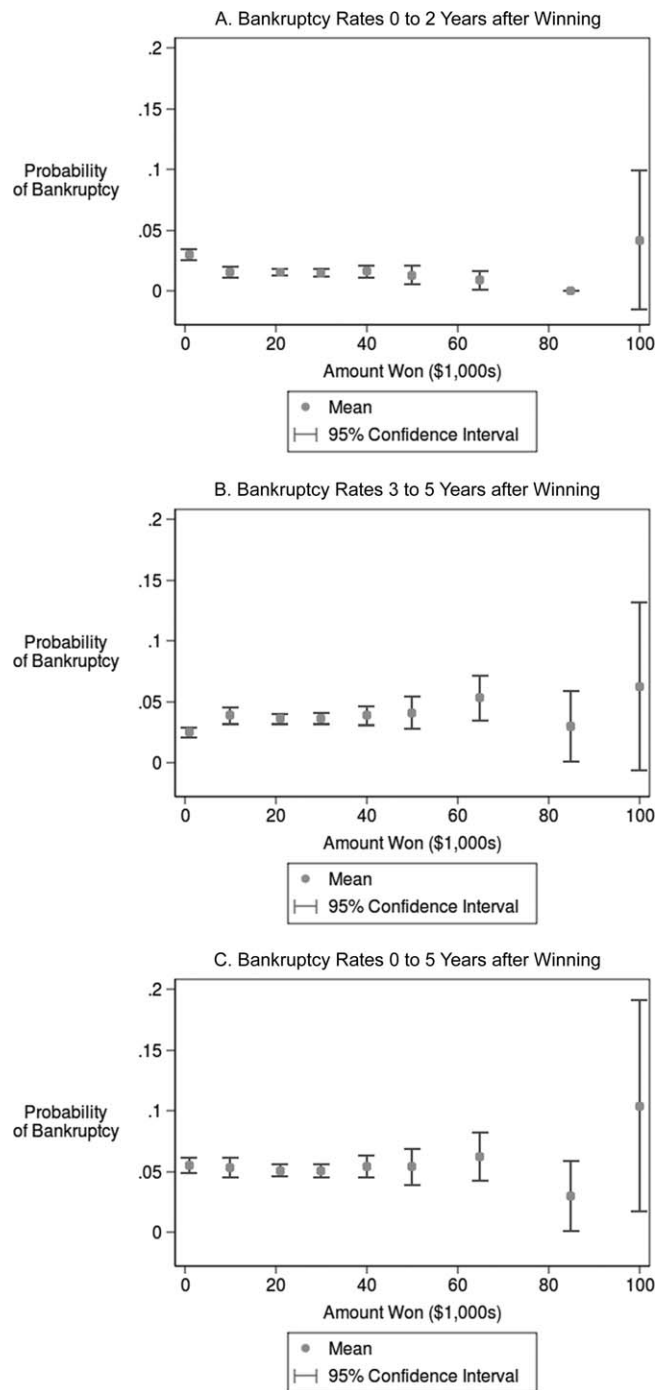
We investigate the robustness of these results in several ways. First, we examine whether the effects are similar when the omitted group is winners of less than \$2,500 rather than \$10,000. In addition, in order to define the control group even more conservatively, we include winners from Florida Lotto¹⁰ and define the omitted group to be those who received less than \$1,000.

Results are shown in specifications 2 and 3 of table 3, where the first specification serves as a reference by showing the preferred result from column 5 of table 2. Results show similar declines in bankruptcy rates for medium and large winners in the two years after winning and statistically significant increases in bankruptcy rates for medium and large winners three to five years after winning.

To further test the validity of our identification strategy, we allow the possibility that the pool of players in a given drawing may change depending on the size of the pot and the size of the largest prize won in the previous drawing. Consequently, we include controls for both the total amount paid out in the previous drawing¹¹ and the maximum prize won in the previous drawing (specification 4), as well as the total amount paid out in the current drawing (specification 5). As shown in table 3, the estimates remain unchanged.

Perhaps a more worrisome possibility is that while the total number of players (and thus prize pot) is exogenous, the number of individuals who match all five numbers on a given day is not. For example, one might be worried that certain individuals play “more random” numbers than others and thus win more, conditional on matching all five

FIGURE 2.—BANKRUPTCY RATES AFTER WINNING THE LOTTERY



numbers. While we showed earlier that this was unlikely since large and small winners come from the same neighborhoods and did not file for bankruptcy at different rates prior to winning, here we offer an additional test. After the game structure changed on July 16, 2001, the prize size was determined largely by whether the individual matched five of five numbers or matched four of five numbers when no one else matched all five. Individuals who matched five numbers won an average of \$80,000, while those who

⁹ This figure comes from the bankruptcy filings of lottery players who filed for bankruptcy in the year prior to winning the lottery. These data are discussed in more depth in section VI.

¹⁰ Florida Lotto is similar to Fantasy 5 except that individuals can match up to six numbers and win a maximum prize of several million dollars. We use data on individuals who matched five of six numbers and thus won between \$600 and \$20,000.

¹¹ This excludes amounts less than \$600, which we do not observe.

TABLE 3.—ROBUSTNESS CHECKS

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|------------------------|------------------------|-----------------------------|------------------------|-----------------------|---|------------------------|
| A. Bankruptcy Rate within 2 Years after Winning | | | | | | | |
| Won \$10,000–\$50,000 | –0.0087** (0.0038) | –0.0116* (0.0067) | –0.0080** (0.0040) | –0.0102** (0.0032) | –0.0087** (0.0039) | - | –0.0087** (0.0038) |
| Won \$50,000–\$150,000 | –0.0163*** (0.0050) | –0.0184*** (0.0064) | –0.0152*** (0.0044) | –0.0172*** (0.0037) | –0.016*** (0.0041) | –0.0119* (0.0068) | –0.0163*** (0.0050) |
| B. Bankruptcy Rate 3 to 5 Years after Winning | | | | | | | |
| Won \$10,000–\$50,000 | 0.0050 (0.0047) | 0.0117 (0.0084) | 0.0127*** (0.0048) | 0.0083* (0.0043) | 0.0045 (0.0049) | - | 0.0053 (0.0047) |
| Won \$50,000–\$150,000 | 0.0121** (0.0062) | 0.0171** (0.0080) | 0.0187*** (0.0071) | 0.0145** (0.0068) | 0.0114 (0.0071) | 0.0192* (0.0101) | 0.0122** (0.0062) |
| C. Bankruptcy Rate within 5 Years after Winning | | | | | | | |
| Won \$10,000–\$50,000 | –0.0036 (0.0060) | 0.0002 (0.0106) | 0.0046 (0.0062) | –0.0019 (0.0053) | –0.0041 (0.0062) | - | –0.0034 (0.0060) |
| Won \$50,000–\$150,000 | –0.0042 (0.0078) | –0.0014 (0.0101) | 0.0035 (0.0083) | –0.0027 (0.0076) | –0.0048 (0.0080) | 0.0073 (0.0120) | –0.0041 (0.0078) |
| Excluded group | <\$10,000 | <\$2,500 | <\$1,000 | <\$10,000 | <\$10,000 | 4-of-5 number matchers | <\$10,000 |
| Lottery game/sample | Fantasy 5 | Fantasy 5 | Fantasy 5 and Florida Lotto | Fantasy 5 | Fantasy 5 | Fantasy 5 (after game change in July of 2001) | Fantasy 5 |
| Controls for the maximum prize and total payout from previous drawing | No | No | No | Yes | No | No | No |
| Controls for total payout from current drawing | No | No | No | No | Yes | No | No |
| Instruments for actual payout with whether matched 5 of 5 numbers | No | No | No | No | No | Yes | No |
| Controls for quadratic of the months of exposure to bankruptcy reform | No | No | No | No | No | No | Yes |
| Number of observations | 34,987 | 34,987 | 109,121 | 34,987 | 34,987 | 13,874 | 34,987 |

Each column controls for year fixed effects and the change in the structure of the Fantasy 5 game. Column 3 also includes game fixed effects. Estimates reported in column 1 are the same as those reported in column 4 of table 4. Column 7 includes a quadratic of the months exposed to the anticipation of bankruptcy reform during March 1, 2005 through October 16, 2005 as well as a quadratic of the months exposed to the new bankruptcy law that took effect on October 17, 2005. Standard errors are in parentheses. *, **, ***Significant at the 10%, 5%, and 1% levels, respectively.

matched four numbers during this time period won just over \$1,000. Consequently, we instrument for being a large winner using an indicator for whether the individual matched five of five numbers.

Results, in column 6 of table 3, show that large winners (as proxied by having matched five of five numbers) are 1.2 percentage points less likely to file for bankruptcy in the first two years ($p = 0.081$) but are 1.9 percentage points more likely to file three to five years afterward ($p = 0.058$). Given whether an individual matches five rather than four numbers is purely random, we interpret this as compelling evidence in support of our identification strategy.

Finally, we examine whether differential exposure of large and small winners to bankruptcy reform is driving the results. The Bankruptcy Abuse Prevention and Consumer Protection Act (BAPCPA) was signed on April 20, 2005, and went into effect on October 17, 2005. In anticipation of the change, bankruptcy filings increased beginning in March 2005 and peaked in October, before the law went into effect. While we would expect that year fixed effects would control for much of the effect of bankruptcy reform, we also construct two control variables that capture exposure to these effects more precisely. The first measures the number of months during the time period in question in which the individual faced a greater incentive to file for bankruptcy given the expectation that BAPCPA would take effect. The second control variable measures the number of months during the time period in question in which the lot-

tery winner faced a reduced probability of filing for bankruptcy due to the tougher bankruptcy laws.¹²

Results are shown in column 7 of table 3 and are consistent with the findings reported earlier. Together with results from columns 2 through 6, this implies that the results are unaffected by the choice of control group, the current or previous drawing's prize pool, the previous drawing's maximum prize won, or bankruptcy reform. In addition, in results available on request, we find that similar findings result when estimating the effect of the cash transfers using a probit instead of ordinary least squares.¹³ Finally, the results are robust to comparing the subset of large and small winners for whom the variation in winnings is unquestionably random.

D. Attrition

As noted earlier, individuals were linked to bankruptcy based on first and last name, as well as county of residence.

¹² For example, an individual who won on June 1, 2001, was exposed to 7.5 months (from March 1, 2005, through October 16, 2005) in which consumers expected a tougher bankruptcy law in the future and 7.5 months facing the new bankruptcy law (from October 17, 2005, when the new law went into effect through May 31, 2006, exactly five years after winning).

¹³ Specifically, marginal effects from probit estimations indicate that large winners are 1.3 percentage points ($p = 0.000$) less likely to file within two years of winning and are 1.3 percentage points ($p = 0.084$) more likely to file three to five years afterward.

Given this approach, attrition will cause a problem for identification under two conditions: the amount won is correlated with propensity to move out of the county, and some of the individuals who moved out of the county on the basis of amount won filed for bankruptcy in the next five years. In other words, if migration is orthogonal to the amount won, then there will be no bias. Similarly, if none of the individuals who move out of the county file for bankruptcy, then there is no error in who is ultimately matched to a bankruptcy.

Migration is perhaps less likely to be an issue in Florida than in other states for two reasons. First, counties in Florida represent relatively large geographic areas. For example, the average county in Florida (by population) is 1,866 square miles, or more than six times the size of New York City.¹⁴ In addition, Florida was a net in-migration state over this time period. Consequently, one might expect that leaving the county after winning \$50,000 to \$150,000 would be less likely in Florida than it would be in other states.

We can offer an empirical test of whether receiving large amounts of cash causes people to leave the county. Specifically, we examine whether the amount won is correlated with the likelihood that the individual will be found in the 2008 phone book one, two, three, four, five, and six years after winning. While this is an imperfect test due to the fact that some households no longer have landlines, some individuals in a household with a landline are not listed in the phone book, and winning the lottery could potentially enable individuals to afford a landline, the exercise is instructive nonetheless. One might especially be concerned if large winners were much less likely to show up in the phone book in the first two years after winning the lottery, but then were much more likely to show up in the phone book three to five years after winning.

The results from this exercise show no evidence of such a pattern. Specifically, we find that large winners were a statistically insignificant 3.0 percentage points more likely to show up in the phone book within two years of winning the lottery relative to small winners, of whom 30.4 percent were listed in the county phone book. The difference in years 3 through 5 is a similarly insignificant 3.1 percentage points. Collectively, this provides suggestive evidence that the pattern in bankruptcy rates is not driven by selective migration out of the county.

VI. Discussion

There are several potential explanations for the result that in the aggregate, receiving large financial windfalls only delays bankruptcy rather than prevents it. Perhaps the simplest interpretation is that bankruptcy is postponed at the individual level. For example, while indebted individuals may use financial windfalls to continue to make payments to creditors or increase their consumption in the near term,

they may not pay down debt sufficiently to avoid bankruptcy in the longer term. This could occur if individuals have high discount rates, engage in mental accounting, or struggle with financial literacy. Alternatively, recipients of large cash windfalls may find it optimal to game the bankruptcy system by consuming or protecting their windfall in the expectation that they will later file for bankruptcy anyway. In fact, Florida bankruptcy law allows an unlimited homestead exemption, which provides an incentive for individuals to increase their equity in real estate as a way of protecting their winnings from creditors in bankruptcy court.

A different interpretation of the results is that receiving large cash windfalls does not delay bankruptcy at the individual level. Instead, it may be that some individuals use their winnings to avoid bankruptcy, while others make consumption commitments with their cash, such as buying a house. In the years afterward, a fraction of those winners will be subjected to a negative income shock that would not have pushed them into bankruptcy had they not bought a house (Zhu, forthcoming).

To help distinguish between these interpretations and address whether large winners who subsequently file for bankruptcy have less debt than small winners, we acquired data on cases filed after 2004, the year when details of bankruptcy filings became available electronically. We retrieved data for a random sample of people who won less than \$1,500 and (a) filed in the five years prior to winning, (b) filed zero to two years after winning, or (c) filed three to five years after winning. In addition, we retrieved and coded data from the case filings of all recipients of more than \$25,000 who filed after 2004 and for whom the filing was up to five years before winning, zero to two years after winning, or three to five years after winning. We emphasize that many of these lottery winners were not in our original data set since we could acquire detailed data only for cases filed after 2004.

The descriptive statistics for this sample of filers are set out in table 4 and show the levels of debt, assets, income, expenditures, and real estate averaged over all individuals in each group, including those who reported zeros. Panel A shows that there is no economically or statistically significant difference between the assets, debts, income, and expenditures of larger and smaller winners who filed for bankruptcy before winning the lottery, consistent with the identifying assumption.

Panel B shows the characteristics of individuals who filed for bankruptcy within two years after winning. Figures in the table show evidence consistent with multiple interpretations. Larger winners who did not avoid bankruptcy in the near term were those who had the highest level of debt. This suggests that in the short term, large cash windfalls do reduce bankruptcy filings by those with the least to gain from filing. However, large winners who file in the near term also have significantly higher housing commitments; 74% owned their homes compared to 52% of small winners who filed.

¹⁴ www.fl-counties.com and www.census.gov/popest.

TABLE 4.—DEBTS, ASSETS, EXPENDITURES, AND INCOME OF LOTTERY WINNERS WHO FILE FOR BANKRUPTCY

| | Debt and Assets | | | Income, Expenditures, and Real Estate | | | |
|----------------------------------|-----------------------------------|------------------------------------|----------|---------------------------------------|-----------------------------------|------------------------------------|----------|
| | Large Winners (<i>N</i> = 20) | Small Winners (<i>N</i> = 52) | Diff | | Large Winners (<i>N</i> = 20) | Small Winners (<i>N</i> = 52) | Diff |
| A. 0–5 Years Prior to Win | | | | | | | |
| Unsecured debt (\$) | 44,717 | 50,921 | –6,204 | % homeowner | 75% | 56% | 19 |
| Secured debt (\$) | 63,556 | 66,972 | –3,416 | Equity in real estate (\$) | 20,771 | 31,209 | –10,438 |
| Total debt (\$) | 108,274 | 117,893 | –9,620 | Market value of real estate (\$) | 79,505 | 84,592 | –5,087 |
| Total assets (\$) | 93,395 | 94,529 | –1,133 | Annual household income (\$) | 16,213 | 17,529 | –1,316 |
| Net assets (\$) | –14,878 | –23,364 | 8,486 | Annual expenditures (\$) | 23,519 | 23,955 | –436 |
| | Large Winners (<i>N</i> = 17) | Small Winners (<i>N</i> = 61) | Diff | | Large Winners (<i>N</i> = 17) | Small Winners (<i>N</i> = 61) | Diff |
| B. 0–2 Years after Win | | | | | | | |
| Unsecured debt (\$) | 76,813 | 60,752 | 16,061 | % homeowner | 76% | 52% | 24 |
| Secured debt (\$) | 131,708 | 63,487 | 68,220** | Equity in real estate (\$) | 18,861 | 17,621 | 1,240 |
| Total debt (\$) | 208,521 | 124,239 | 84,282** | Market value of real estate (\$) | 145,425 | 73,170 | 72,255** |
| Total assets (\$) | 164,406 | 93,971 | 70,434** | Annual household income (\$) | 24,714 | 23,409 | 1,304 |
| Net assets (\$) | –44,115 | –30,268 | –13,847 | Annual expenditures (\$) | 35,124 | 31,122 | 4,002 |
| | Large Winners (<i>N</i> = 36) | Small Winners (<i>N</i> = 44) | Diff | | Large Winners (<i>N</i> = 36) | Small Winners (<i>N</i> = 44) | Diff |
| C. 3–5 Years after Win | | | | | | | |
| Unsecured debt (\$) | 40,273 | 55,230 | –14,957 | % homeowner | 53% | 45% | 8 |
| Secured debt (\$) | 74,938 | 73,113 | 1,825 | Equity in real estate (\$) | 22,903 | 33,827 | –10,924 |
| Total debt (\$) | 115,211 | 128,343 | –13,132 | Market value of real estate (\$) | 62,367 | 95,261 | –32,894 |
| Total assets (\$) | 113,571 | 114,303 | –733 | Annual household income (\$) | 17,395 | 20,510 | –3,115 |
| Net assets (\$) | –1,641 | –14,040 | 12,399 | Annual expenditures (\$) | 22,300 | 26,717 | –4,417 |
| | Large Winners (<i>N</i> = 53) | Small Winners (<i>N</i> = 105) | Diff | | Large Winners (<i>N</i> = 53) | Small Winners (<i>N</i> = 105) | Diff |
| D. 0–5 Years after Win | | | | | | | |
| Unsecured debt (\$) | 51,993 | 58,438 | 6,445 | % homeowner | 60% | 50% | 10 |
| Secured debt (\$) | 93,147 | 67,521 | 25,627 | Equity in real estate (\$) | 21,582 | 24,412 | –2,831 |
| Total debt (\$) | 145,141 | 125,959 | 19,182 | Market value of real estate (\$) | 89,521 | 82,427 | 7,093 |
| Total assets (\$) | 129,876 | 102,491 | 27,385 | Annual household income (\$) | 19,742 | 22,194 | –2,452 |
| Net assets (\$) | –15,265 | –23,468 | 8,203 | Annual expenditures (\$) | 26,413 | 29,276 | –2,863 |

Each panel shows average characteristics of lottery winners who filed for personal bankruptcy. *, **, ***Significance at the 10%, 5%, and 1% levels, respectively. Source: PACER.

Panel C shows the characteristics of individuals who filed three to five years after winning the lottery and provides some evidence on whether the increase in the rate three to five years later is due to consumption commitments. If such commitments were responsible, then one might expect large winners who filed during this time to be more likely to be homeowners and to live in more expensive homes. However, we find no evidence that this is the case.¹⁵

Panel D shows the characteristics of winners who filed at some point within five years after winning. There, it is striking that the net assets of recipients of \$25,000 to \$150,000 were only \$8,000 higher than those of people who won less than \$1,500. Furthermore, small winners who filed reported having unsecured debt of \$58,438 while large winners reported a similar amount of \$51,993. We also find that although large winners live in somewhat more expensive

houses than small winners, they are no more likely to own a home and have no more equity in their homes than small winners do. This suggests that larger winners are not gaming the homestead exemption in Florida bankruptcy law. While this may surprise some economists, it did not surprise bankruptcy lawyers with whom we spoke¹⁶ and is consistent with other evidence more supportive of a notion of bounded rationality among lottery players (Guryan & Kearney, 2008).

In short, we find little evidence that the increase in the bankruptcy rates of large winners three to five years after winning is due to consumption commitments. The data also provide no support for the interpretation that large winners game the bankruptcy system by taking advantage of Florida's unlimited homestead exemption in bankruptcy since there is no difference in the real estate equity of large and small winners who subsequently file for bankruptcy. However, we are ultimately unable to distinguish whether large winners delay rather than prevent filing for bankruptcy due to myopia or because, for example, they strategically consume

¹⁵ In checking the sensitivity of the figures in table 4 to outliers, we found one larger winner who filed three to five years afterward and who reported living in a house worth over \$1 million. Consequently, we excluded this individual when calculating the average real estate market value and equity in panels C and D in table 4. Including this individual changes average equity and market value to \$27,810 and \$92,023 in panel C and to \$24,940 and \$109,152 in panel D.

¹⁶ One in particular commented that this type of behavior is so unlikely that "only economists would be concerned about that."

their winnings with the expectation of later filing for bankruptcy.

Finally, we find that among those who filed for bankruptcy, the net assets of recipients of \$25,000 to \$150,000 are no different from those who received less than \$1,500. This suggests that whatever the recipients did with their cash, they did not use it to pay down debt or increase their assets. This result is roughly consistent with that of Agarwal, Liu, and Souleles (2007) who find that although consumers initially used federal rebate checks to reduce debt, eventually their debt levels returned to their prerebate levels. The fact that this appears to be true even when consumers receive vastly larger cash transfers is, however, striking.

VII. Conclusion

We investigate the extent to which receiving large lump sums of cash affects bankruptcy in the short and long terms. To distinguish the effect of the transfer from other confounding factors, we compare lottery players who won between \$10,000 and \$50,000 or between \$50,000 and \$150,000 to those who won less than \$10,000. Consistent with the identifying assumption that the magnitude of the prize won is randomly assigned conditional on winning, we find no statistical difference between these groups' bankruptcy rates prior to winning or in the assets, debts, incomes, or expenditures of those winners who did file prior to winning the lottery.

The results indicate that while the lump-sum payments reduce the probability of bankruptcy in the first two years after winning in an economically and statistically significant way, this reduction is followed by statistically significant increases of similar magnitude three to five years after winning. Furthermore, a deeper examination of the bankruptcy filings shows that not only are the rates of bankruptcy not different overall, but recipients of \$25,000 to \$150,000 who later filed for bankruptcy did so with similar levels of net assets and unsecured debt. Bankruptcy records also reveal little evidence that large winners filed for bankruptcy due to increased housing consumption commitments or in order to game the unlimited homestead exemption in Florida bankruptcy law. This indicates that receiving cash transfers that are sufficiently large to pay off all of one's unsecured debt enables individuals only to postpone rather than prevent bankruptcy.

Our findings have two primary implications. First, the results appear inconsistent with the negative shock model of bankruptcy. This is because even though large winners were essentially granted a reprieve from any negative shock they might have endured, they still filed for bankruptcy at the

same rate as recipients of much smaller sums. This suggests the presence of either strategic or, perhaps more likely, myopic behavior. In addition, while we cannot be certain that the response by individuals in our data set would extend to other populations of interest, our findings suggest that skepticism regarding the long-term impact of cash transfers may be warranted.

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