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Keywords: Older adults, financial distress, foreclosure, bankruptcy, retirement

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Bankruptcy filings by the elderly have increased dramatically as a proportion of filings overall: data from the Consumer Bankruptcy Project show that the percent of all bankruptcy filings that are by the elderly increased six-fold over the past 25 years, from just 2 percent in 1991 to 12 percent in 2013-16 (Thorne et al. 2018). Our figures, based on a much larger sample but covering a shorter time period, show a doubling in the percent of filings by the elderly since 2000, from 6 percent in 2000 to 12 percent in 2018.[1] Some of the increase in bankruptcy filings by the elderly is simply due to aging of the US population, but the share of the elderly in the US population only increased by 19 percent over the period 2000-2018—much less than the rate of increase in the elderly share of bankruptcies.[2] Thus the data suggest that there has been a disproportionate increase in financial distress of the elderly relative to the overall US population.

Foreclosures are also a sign of severe financial distress for homeowners. Although it is initiated by lenders rather than debtors, they generally occur when homeowners in financial distress cannot afford their mortgage payments. Our data show that the share of the elderly in foreclosures also increased rapidly, from 6.8 percent in 2000 to 11 percent in 2018, for an increase of nearly two-thirds.[3] This rise again suggests a disproportionate increase in financial distress of the elderly.

This chapter examines the question of whether and why financial distress has increased among the elderly relative to the general population. We focus on both bankruptcy filings and foreclosure starts as dual indicators of severe financial distress. In particular, we examine whether two events that occurred during the period can explain the increase in elderly financial distress: the 2005 bankruptcy reform and the financial crisis that started in 2008. The 2005 bankruptcy reform discouraged all debtors from filing for bankruptcy by raising the costs of filing and particularly discouraged debtors with above-median household incomes from filing by adding

additional obstacles.[4] These changes made debtors worse off in general because discharge of debt in bankruptcy became less available. It also increased foreclosures because filing for bankruptcy previously helped homeowners in financial distress save their homes by discharging non-mortgage debt (see Li, White and Zhu 2011; White and Zhu 2010). Similarly, the financial crisis that started in 2008 increased financial distress because many workers lost their jobs, leading to increases in both bankruptcy filings and foreclosures. Home prices also fell sharply, causing additional foreclosures because some homeowners chose to walk away from homes with underwater mortgages. But whether bankruptcy reform and the financial crisis had stronger negative effects on the elderly than younger age groups is an open question. We examine whether and how both events affected bankruptcy filings and foreclosure starts of the elderly relative to the general population.

Bankruptcy Filings and Foreclosure Starts by the Elderly: New Evidence

Our data are taken from the Federal Reserve Bank of New York Consumer Credit Panel/Equifax Data (CCP), which is based on a 5 percent sample of US individuals who have Equifax credit reports. [5] We take a random sample of 5 percent of individuals in the CCP, so that our dataset is a random sample of 0.25 percent of all individuals with credit reports. These data are reported quarterly and provide information concerning individuals' debts, Equifax Risk Scores, age, and location at the zip code level.[6] We also know each quarter whether an individual filed for bankruptcy or if lenders started foreclosure.[7] We drop individuals from the sample in the quarter following a bankruptcy filing when we examine bankruptcy filings, and we drop individuals from the sample in the quarter following the start of foreclosure when we examine foreclosure starts. Thus only the first bankruptcy filing or foreclosure start is considered. In what

follows, we define the older population as persons age 65-85, versus the total population as those age 20-85. Individuals younger than age 20 or older than 85 are dropped. [8]

Figure 1 shows bankruptcy filings and foreclosure starts of the elderly as a proportion of the total population from 2000 to 2018. Here we see that the elderly shares of bankruptcies and foreclosures are closely correlated, especially from 2000 to 2011, but they tended to diverge after 2012. The elderly share of foreclosures peaked in 2012 and has declined since, while the elderly share of bankruptcies continued rising up to 2017.

Figure 1 here

Next we evaluate whether rising debt levels explain the increase in financial distress in the older population. As a comparison group, we use all individuals age 45-64 which we refer to here as the 'near-elderly;' these people are a useful comparison set because their financial situations are closest to that of the elderly. Like the elderly, the near-elderly tend to have declining debt levels over time, while younger individuals' debt levels tend to increase over time.

Figure 2 shows average bankcard (credit plus debit card) debt and average mortgage (first mortgage plus home equity loans) debt of the elderly, relative to the near-elderly. Bankcard debt levels of the elderly relative to the near-elderly increased from 50 percent in 2000 to 66 percent in 2018, or by one-third. This reflects the fact that the near-elderly reduced their bankcard debt levels over the period, while the elderly did not. Mortgage debt figures are based on averages for all individuals, including non-homeowners who do not have mortgages or home equity loans. Mortgage debt levels of the elderly relative to the near-elderly increased even faster than bankcard debt levels over the period, rising from 50 percent in 2000 to 78 percent in 2018, or by more than half. Thus the relative increase in debt levels of the elderly are likely to be an important factor in explaining the increase in elderly financial distress. Also the rise in the proportion of bankruptcy

filings and foreclosure starts of the elderly was larger than the rise in relative debt levels of the elderly, suggesting that marginal increases in debt led to large increases in elderly financial distress.

Figure 2 here

Overall, these figures suggest that there has been an increase in financial distress of the elderly relative to the non-elderly population, since 2000. In the next two sections, we examine two possible causes of the increase in elderly financial distress--the bankruptcy reform of 2005 and the financial crisis of 2008--and we test whether and to what extent they can explain the increase.

Legal Background and Hypotheses

Before 2005, US bankruptcy law was very favorable to debtors: all debtors were allowed to file for bankruptcy under Chapter 7 under which all of their unsecured debts could be discharged. Debts that could be discharged in bankruptcy included credit card debts, unsecured installment debts, medical debts, past due rent and utility bills, and student loans. (Secured debts such as car loans could not be discharged in bankruptcy unless the debtor gave up the collateral securing the loan.) Future income was entirely exempt from the obligation to repay, and debtors were only required to repay from assets if their assets exceeded an exemption level set by their state of residence. States have varying exemption levels for assets, ranging from very low to unlimited for equity in owner-occupied homes. In states such as Florida and Texas that have unlimited exemptions for equity in owner-occupied homes, debtors who were homeowners could benefit financially from filing for bankruptcy even if they had both high incomes and high assets. Prior to 2005, a high fraction of US households could gain financially from filing for bankruptcy.[9]

There was also a separate bankruptcy procedure, Chapter 13, under which debtors could propose a plan to repay part of their debt from future earnings over 3 to 5 years. Before 2005, debtors had the right to choose between filing under Chapter 7 or Chapter 13, and they were not obliged to repay more in Chapter 13 than the value of assets they would be obliged to give up in Chapter 7. Accordingly, most debtors could file under Chapter 13 and propose a plan to repay only a token amount of debt, since they were not obliged to repay anything in Chapter 7. Chapter 13 also allowed some types of debts that were not dischargeable in Chapter 7—such as unpaid taxes—to be discharged or repaid over time under the plan.

Filing for bankruptcy prior to 2005 also could help debtors who were homeowners avoid foreclosure. Filing under Chapter 7 indirectly helped debtors keep their homes, because having unsecured debt discharged increased their ability to make their mortgage payments. Filing under Chapter 13 helped debtors more directly, both because unsecured debt was discharged and because debtors could stop foreclosure and spread out repayment of mortgage arrears over the period of their repayment plans. In addition, second mortgages could be discharged in Chapter 13 if they were completely underwater. Filing under Chapter 13 also helped debtors avoid repossession of their cars and underwater car loans could be reduced to the market value of the car. [10]

The 2005 bankruptcy reform made bankruptcy much less favorable to debtors in general. First, the blanket exemption of future income from the obligation to repay was abolished for debtors with family incomes above the median level in their states. These debtors are now obliged to take a ‘means test’ that determines whether they must file under Chapter 13 and, if so, provides a formula that determines how much of their future income must be used to repay. The formula is based on Internal Revenue Service (IRS) procedures for collecting from delinquent taxpayers, although additional expenses are allowed. The adoption of the means test thus reduced the gain

from filing for bankruptcy for debtors who had above-median income levels. Second, the costs of filing for bankruptcy rose, because lawyers' fees increased and because the reform imposed new requirements on debtors to pay for and take credit counselling and debt management courses. These changes discouraged many debtors from filing even if they had below-median income levels.[11] Third, bankruptcy reform made some types of debts non-dischargeable in bankruptcy. Student loans were no longer discharged and car loans could no longer be reduced in bankruptcy to the market value of the vehicle. [12]

These 2005 changes resulted in bankruptcy becoming both less beneficial to debtors in general, and less useful as a means for debtors to save their homes. As a result, we predict both a fall in bankruptcy filing rates, and a rise in foreclosure rates following bankruptcy reform. Of most interest in this chapter is how these predictions differ for the elderly relative to the non-elderly, which depends on the net effect of a number of changes made by bankruptcy reform. Average levels of debt of all types tend to decline rapidly with age, starting around age 45. This means that elderly debtors gain less than the non-elderly from filing for bankruptcy and, as a result, are predicted to be harmed less by bankruptcy reform. In addition, income from Social Security is not counted in the means test that determines whether debtors must file under Chapter 13. Because only the elderly have social security benefits, this also means that they were harmed less than the non-elderly by bankruptcy reform: they are more likely to still qualify for Chapter 7. Finally, a uniform new asset exemption of $1 million for retirement accounts such as 401(k) plans was instituted under the 2005 bankruptcy reform. Because the older population tends to have the largest amount of assets in retirement accounts, this new exemption made bankruptcy more attractive for the elderly relative to the non-elderly. Yet many states already had high exemptions for retirement assets in bankruptcy, so that few elderly individuals had enough assets in retirement

accounts to be affected by the adoption of the new Federal exemption. As a result, other factors would be predicted to be more important. Overall, the 2005 bankruptcy reform can be predicted to have caused a smaller drop in bankruptcy filings by the elderly compared to the non-elderly, which means that the proportion of elderly bankruptcy filers would be predicted to have increased after 2005.

Next we explore how foreclosure rates by the elderly versus the non-elderly might be predicted to respond to the bankruptcy reform. Because homeowners use bankruptcy to avoid foreclosure and bankruptcy became less attractive after the reform, we predict a rise in foreclosure rates after 2005 for both the elderly and the non-elderly. Yet as discussed above, the elderly have less mortgage debt on average than the non-elderly, and the reform discouraged them from filing by less than it discouraged the non-elderly. Both of these factors imply that the foreclosure rate for the elderly would be predicted to rise by less than that of the non-elderly following the 2005 reform.[13]

Finally, we turn to the impact of the financial crisis. Personal bankruptcy filings fell sharply after the 2005 bankruptcy reform—from 2 million in 2005 to 775,000 in 2007—before rising again after the start of the financial crisis in 2008—filings peaked at 1.5 million in 2010. Similarly, foreclosures rose quickly when the financial crisis began. The increase in bankruptcies and foreclosures reflects both the decline in debtors' incomes due to widespread job loss and the fall in housing prices that caused some homeowners to walk away from their homes since their mortgages were underwater after housing prices declined.

How might we predict that the financial crisis affected the elderly relative to the non-elderly? The elderly receive social security income that remained unaffected by the financial crisis, and they were also less likely to lose their jobs because they were less likely to work in the

first place. This implies that the elderly were harmed less by the financial crisis, so the increase in bankruptcy filings following the crisis would have been predicted to be less for the elderly than the non-elderly. Similarly, elderly homeowners are less likely to have mortgages and have less mortgage debt than homeowners in general, meaning they were less likely to default on their mortgages after the financial crisis, both because they were less likely to be financially distressed, and because their mortgages were less likely to be underwater after the crisis.[14]

For these reasons, the 2005 bankruptcy reform is predicted to have reduced bankruptcy filings and increased foreclosure starts for all age groups, but the changes for the elderly would be predicted to be less than for the non-elderly. Accordingly, we predict an increase in the proportion of older bankruptcy filers after 2005, but a reduction in the proportion of foreclosure starts affecting the elderly after 2005. The 2008 financial crisis would be anticipated to boost both bankruptcies and foreclosures for all age groups, but by less for the elderly than other ages. Accordingly, our model predicts a relative decline in the proportion of both bankruptcies and foreclosures affecting the elderly after the financial crisis. We test these predictions in the next sections.

Summary statistics and difference-in-differences

We estimate separate models explaining bankruptcy filings and foreclosure starts over the period of the 2005 bankruptcy reform and the 2008 financial crisis, using the data discussed above. Because we use the near-elderly as our comparison group for the elderly, we drop all observations of individuals older than age 85 or younger than age 45.

Bankruptcy reform went into effect in the fourth quarter of 2005.[15] For the analysis of the effect of bankruptcy reform, we drop the two quarters before and two quarters after the reform

occurred (2005Q2 through 2006Q1), because there was a rush to file before the reform went into effect and very few filings occurred just after the reform. We end the sample period at the end of 2007 in order to avoid including the beginning of the financial crisis in the analysis of bankruptcy reform. Our time period for the analysis of bankruptcy reform therefore covers seven quarters before the reform, from 2003Q3 to 2005Q1, and seven quarters after, from 2006Q2 through 2007Q4. The number of observations in the sample explaining bankruptcy filings before/after bankruptcy reform is 4.6 million, covering 338,000 distinct individuals. For the analysis explaining foreclosure starts before/after bankruptcy reform, we restrict the sample to individuals who have positive mortgage debt. This sample has 1.8 million observations covering 160,000 distinct individuals.

Turning to the analysis of the financial crisis, we date the crisis to the first quarter of 2008 and our sample period covers 2006Q3 through 2009Q4, or six quarters before and eight quarters after the crisis. We start the sample period at 2006Q3 to avoid including the period before bankruptcy reform. Sample sizes are similar to those used to explain bankruptcy filings and foreclosure starts before/after bankruptcy reform. (Appendix Table 1 reports summary statistics for both samples.)

First we calculate simple difference-in-differences reported in Table 1. Here the top panel gives annual bankruptcy filing rates before versus after the 2005 bankruptcy reform for the elderly versus the near-elderly. The filing rate for the elderly in the pre-reform period was 0.35 percent per year, while the filing rate for the near-elderly was more than twice as high at 0.84 percent per year. Thus the elderly filed for bankruptcy much less often than the near-elderly, presumably because they have less debt. Filing rates fell sharply after bankruptcy reform for both groups, but the drop was 0.19 percentage points for the elderly versus the much larger figure of 0.50 percentage

points for the near-elderly. Because the drop for the elderly was smaller, the difference-in-difference is positive and large: 0.33 percentage points, which is nearly as large as the pre-reform bankruptcy filing rate of the elderly. The fact that the difference-in-difference is positive accords with our prediction that the 2005 bankruptcy reform caused the proportion of bankruptcy filings by the elderly to increase.

Table 1 here

In the bottom panel of Table 1, we offer the same calculations for foreclosure rates before versus after the 2005 bankruptcy reform. The foreclosure rate for the elderly rose slightly from 0.42 percent per year before the reform to 0.48 percent after, but the foreclosure rate for the near-elderly rose more, from 0.54 percent to 0.68 percent. Because the absolute increase for the elderly was smaller than for the near-elderly, the difference-in-difference is negative, or -0.08 percentage points. The negative result is again consistent with our prediction and it implies that bankruptcy reform caused the proportion of foreclosure starts affecting the elderly to fall.

Next we turn to the financial crisis. The top panel of Table 2 shows the same information for bankruptcy filing rates before versus after the financial crisis. Bankruptcy rates increased sharply for both groups following the crisis: the increase for the elderly was from 0.18 percent per year before the crisis to 0.26 percent after, or by 0.08 percentage points; while the increase for the near-elderly was from 0.38 percent per year to 0.66 percent, or by 0.28 percentage points. In percentage terms, these increases are 48 percent for the elderly versus 75 percent for the near-elderly. Because the absolute increase for the elderly was smaller, the diff-in-diff is negative, or -0.20 percentage points. This result supports our prediction that the financial crisis caused the proportion of bankruptcy filings by the elderly to fall, because their bankruptcy filing rate increased by less than that of the near-elderly.

Table 2 here

The bottom panel of Table 2 shows the change in foreclosure rates before versus after the financial crisis. Foreclosure rates of the elderly increased from 0.48 percent per year before the crisis to 0.83 percent afterwards, or by 0.35 percentage points, while the foreclosure rates of the near-elderly increased sharply from 0.76 percent per year before the crisis to 1.6 percent after, or by 0.82 percentage points. Because the increase for the elderly was smaller, the diff-in-diff is -0.47 percentage points. This result again supports our prediction that the financial crisis had less negative effects on the elderly than the near-elderly, resulting in a fall in the proportion of foreclosures affecting the elderly. Note that both of the diff-in-diff terms for the financial crisis are large in absolute terms—they are as large as the pre-crisis absolute bankruptcy and foreclosure rates for the elderly.

The large size of the difference terms suggests that bankruptcy reform and the financial crisis had large negative effects on both the elderly and the near-elderly. Nevertheless, the difference-in-difference terms suggest that these negative effects were smaller for the elderly than the near-elderly.

Regression Specification and Results

Next we run probit regressions that repeat the calculations, but we now add other controls. The specification is a difference-in-difference regression, where we define Y_{it} as a dummy variable equal to 1 if individual i files for bankruptcy in quarter t and 0 otherwise. Moreover, $Post_t$ is equal to 1 in the period after bankruptcy reform and zero before; $Elderly_i$ is equal to 1 for the elderly and 0 for the near-elderly; and Z_{it} is a vector of control variables. The controls consist of individual i's bank card debt, auto loan debt, and mortgage debt, all lagged one quarter

and deflated to 2004 dollars, and dummies for individual ***i***'s Risk Score in categories, with the lowest score category omitted. We also include fixed effects for individuals' age in years and for state of residence. ***ε_it*** is the error term. We estimate the following model:

$$Y\_it = a + b(Post\_t) + c(Elderly\_i*Post\_t) + d(Z\_it) + \varepsilon\_it$$

The difference-in-difference term is ***c***. Errors are clustered by individual.[16] The sample and time period are the same as discussed above for the raw difference-in-difference calculations. We use probit for this and all regressions.

Additionally we run a regression explaining foreclosure starts before versus after the 2005 bankruptcy reform. The specification is the same as above, except that now ***Y_it*** is redefined to be a dummy equal to 1 if foreclosure started for individual ***i*** in quarter ***t*** and zero otherwise. The time period and sample are the same as discussed above for the raw difference-in-difference calculations in Table 1, lower panel.

We use the same specification for regressions analyzing the effect of the 2008 financial crisis. Here ***Y_it*** is either a dummy for whether individual ***i*** filed for bankruptcy in quarter ***t*** or a dummy for whether foreclosure started for individual ***i*** in quarter ***t*** and ***Post_t*** is a dummy for the period after the financial crisis. The time period and samples are the same as for the raw difference-in-difference calculations in Table 2.

Table 3 shows the results of the regressions explaining bankruptcy filings and foreclosure starts for the bankruptcy reform sample, and *p*-values are in parentheses. In column (1) explaining bankruptcy filings, the ***Post*** variable is negative and significant, reflecting the fact that bankruptcy filings by both the elderly and the near-elderly dropped after the reform. The diff-in-diff term is positive as predicted and statistically significant at the 10 percent level (p = .075). Yet both variables are extremely small: they suggest that filings by the elderly dropped by 0.05 percentage

points, while filings by the near-elderly dropped by 0.06 percentage points. These results suggest that much of the effect of bankruptcy reform seen in Table 1 is accounted for by individual characteristics, rather than by the reform.

Table 3 here

The bankcard and auto debt variables have the predicted positive signs and are highly significant, but mortgage debt is negatively rather than positively related to the probability of bankruptcy—probably because only homeowners have mortgages and homeowners are less likely to file for bankruptcy than renters.

The second column of Table 3 shows the results of the regression explaining the effect of bankruptcy reform on the number of foreclosure starts. Here, the ***Post*** variable is positive as predicted, but it is even smaller than in the regression explaining bankruptcy filings. The diff-in-diff coefficient has a positive rather than the predicted negative sign, but it is extremely small and insignificant. As a result, we conclude that bankruptcy reform raised foreclosure start rates for both the elderly and the near-elderly, but the effects were extremely small and did not differ significantly between the two groups.

We turn now to the results of the financial crisis regressions, shown in Table 4. Column 1 shows the results of the regression explaining bankruptcy filings. The ***Post*** coefficient has the predicted positive sign, the diff-in-diff term has the predicted negative sign, and both are at least marginally significant but they are extremely small. Similarly, column 2 explaining foreclosure starts has a ***Post*** coefficient with the predicted positive sign and the diff-in-diff term is negative, but the latter is insignificant and both are extremely small.

Table 4 here

One possible explanation for the small size of the diff-in-diff coefficients in Tables 3 and 4 is that events such as bankruptcy reform or the financial crisis may cause financial distress that becomes worse over time as debt gradually builds up, but may only lead to bankruptcy or foreclosure after several years. Thus our time periods might be too short to capture the full effects of bankruptcy reform or the financial crisis, leading to small and/or insignificant coefficients for the ***Post*** and ***Elderly*Post*** terms.

To test this possibility, we reran our models using a much longer time period extending from 2000Q1 to 2012Q4. To capture the effect of bankruptcy reform, we use an interaction term between being elderly and the period after bankruptcy reform, ***Elderly_i*Post-Reform_t***; to capture the effect of the financial crisis, we use a separate interaction between being elderly and the post-financial crisis period, ***Elderly_i*Post-Crisis_t***. We also drop the ***Post_t*** variable and introduce quarterly fixed effects. We again drop the period around bankruptcy reform from 2005Q3 to 2006Q1, but otherwise the specification remains the same. We predict that if the effects of bankruptcy reform and/or the financial crisis grew worse over a multi-year period before leading to bankruptcy or foreclosure, then the coefficients of the interaction terms will be larger and more significant than in the shorter period regressions.

Results are shown in Table 5. Surprisingly, all of the interaction terms remain approximately the same magnitude. For example, the ***Elderly*Post-Reform*** coefficient in the regression explaining bankruptcy filings was 0.00011 in Table 3 and 0.00014 in Table 5, while the ***Elderly*Post-Crisis*** coefficient in the regression explaining foreclosure starts was -0.000022 in Table 4 compared to -0.000024 in Table 5; neither was significant. In other words, for the longer period regressions, the result is again that there was little difference between how the elderly versus the near-elderly responded to the 2005 bankruptcy reform or the 2008 financial crisis.

Table 5 here

Another possible explanation for the small size of the difference and diff-in-diff terms in the regressions is that individual debt and risk characteristics variables could indirectly capture the effects of bankruptcy reform or the financial crisis. Suppose that some individuals became financially distressed following the financial crisis due to job loss. As a result, their debt levels rose and their risk scores fell. Since our debt variables are lagged only one quarter and our risk score categories reflect conditions only a month or two earlier, these variables change in response to the financial crisis and may therefore be correlated with our ***Post*** and ***Post*Elderly*** variables, partially capturing the effect of the financial crisis. If so, then the size and significance of our estimated ***Post*** and ***Post*Elderly*** coefficients will fall. The same could be the case in our analysis of bankruptcy reform. In other words, while our raw difference and diff-in-diff results may be overestimates of the effects of bankruptcy reform and the financial crisis, our estimated difference and diff-in-diff results may be underestimates of the same effects.

Conclusions

Our analysis suggests that both the 2005 bankruptcy reform and the 2008 financial crisis had large effects on the number of bankruptcy filings and foreclosure starts, both of which are important indicators of financial distress. The 2005 bankruptcy reform caused the number of bankruptcy filings to fall sharply and the number of foreclosures to rise, implying that fewer debtors used bankruptcy to obtain relief from financial distress and that bankruptcy declined as a mechanism to help homeowners avoid foreclosure. The 2008 financial crisis caused the number of bankruptcy filings and the number of foreclosure starts to rise, implying a general increase in

financial distress. Nevertheless, our economic analysis implies that the elderly were less negatively affected by both the reform and the financial crisis than younger age groups.

The data support these predictions: following bankruptcy reform, the decline in elderly bankruptcy filings was smaller than for the near-elderly, but bankruptcy filings by both groups increased. Also in line with predictions, the 2008 financial crisis caused a smaller increase in bankruptcy filings by the elderly than the near-elderly, so that the proportion of filings by the elderly fell. Both bankruptcy reform and the financial crisis also caused an increase in the number of foreclosure starts by both groups, but the increase for the elderly was smaller. This means that the proportion of foreclosure starts affecting the elderly fell after both bankruptcy reform and the financial crisis. Our results suggest that, while both bankruptcy reform and the financial crisis made debtors significantly worse off, the impact on the elderly was smaller than on younger individuals. Therefore neither bankruptcy reform nor the financial crisis can explain the rise in financial distress of the elderly relative to younger age groups.

Nevertheless, the regression results highlight some additional nuances. In particularly, they suggest that the overall effects of bankruptcy reform and the financial crisis were not particularly negative for either group, and they did not alter outcomes for the elderly versus near-elderly. Specifically, the regression analysis corrects for individual debt characteristics which themselves were negatively affected by bankruptcy reform and the financial crisis. In any event, we conclude that bankruptcy reform and the financial crisis cannot explain the increasing financial distress of the elderly relative to younger age groups.

Disclaimer

The views expressed in this paper are the authors' and do not represent the views of the Federal Reserve Bank of Philadelphia or the Federal Reserve System.

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[1] Our data are from the FRBNY Consumer Credit Panel/Equifax Data (CCP). See the next section for discussion.

[2] The proportion of the population age 65-85 as a share of the population age 20-85 rose from 17.3 percent in 2000 to 20.6 percent in 2018.

[3] These figures reflect the number of foreclosure starts affecting elderly homeowners as a proportion of all foreclosure starts. Note that not all foreclosure starts become completed foreclosures, because homeowners may stop foreclosure by paying off their mortgage arrears, agreeing to a repayment plan with the lender, or making an agreement with the lender to walk away from the property—a short sale.

[4] The reform was the 'Bankruptcy Abuse Prevention and Consumer Protection Act of 2005' (Pub.L. 109-8, 119 Stat. 23, enacted April 20, 2005).

[5] The CCP excludes individuals who do not have social security numbers and those who have no credit history, because they never applied for or qualified for a loan or a credit card. But individuals are covered for 10 years if they applied for a loan or credit card in the past. See Lee and van der Klaauw (2010) for discussion.

[6] Payday loans are not covered because payday lenders do not report information to Equifax. Because payday lenders are excluded, individuals who have only payday loans are excluded from the sample unless they have another type of loan or had one in the past.

[7] Bankruptcy filings include filings under both Chapters 7 and 13.

[8] The CCP underrepresents 20-24 year olds, in part because legislation prevents credit bureaus from setting up files for college-age students and also because many young people do not have credit. In the CCP, the share of 20-24 year olds declined from 8 percent to 6.7 percent between

2000 to 2018, while the share of this group in the population remained at around 9.5 percent over the same period.

[9] See White (1998) for calculations showing that up to one-third of US households could have benefitted financially from filing for bankruptcy under the pre-2005 bankruptcy law.

[10] For discussion of how bankruptcy helps homeowners, see White and Zhu (2010) and Li et al. (2019). For general discussion of bankruptcy law and the 2005 bankruptcy reform, see White (2011).

[11] Since the 2005 bankruptcy reform, bankruptcy filings have peaked in March of each year, suggesting that many filers are deterred by the high costs of filing and delay until they receive their tax refunds.; see US Courts (2018).

[12] Federal government student loans became non-dischargeable except in cases of 'undue hardship' in 1997 and the 2005 bankruptcy reform also made private educational loans non-dischargeable.

[13] For discussion of foreclosure, incentives for mortgage default, and the effect of the financial crisis, see Gerardi et al. (2007), Mayer et al. (2009), Elul et al. (2010), Jiang et al. (2014) and Demyanyk and Van Hemert (2011).

[14] We have argued elsewhere that the 2005 bankruptcy reform caused the financial crisis in part, by making bankruptcy less favorable to debtors and therefore causing mortgage defaults to rise even before the onset of the financial crisis (Li et al. 2011).

[15] The reform went into effect in October 2005.

[16] Standard errors remain virtually the same if we instead cluster the errors by zip code.

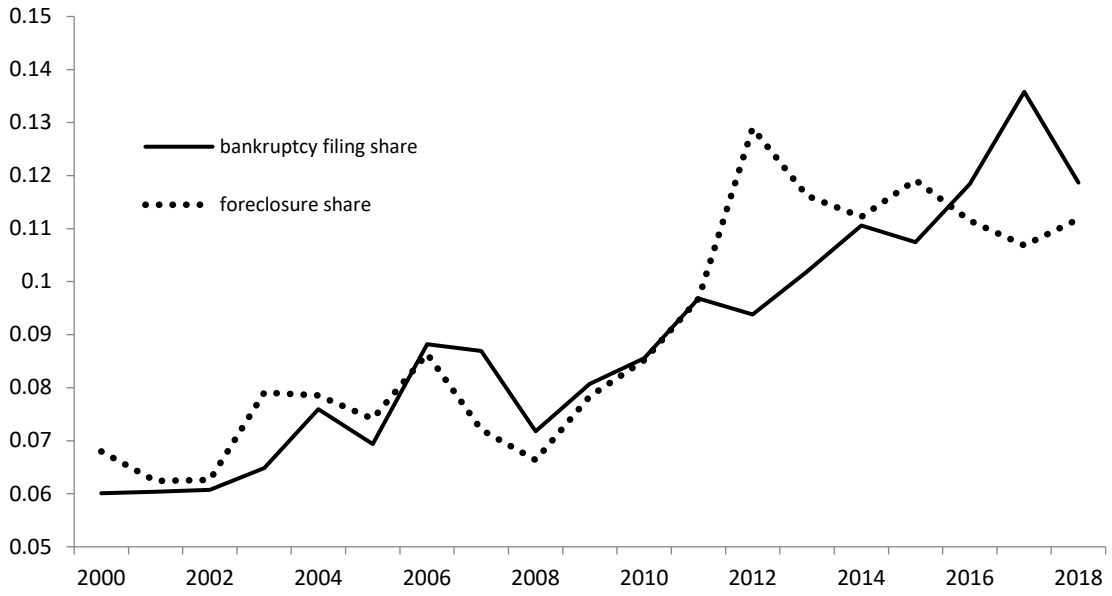

Figure 1. Elderly Share of Bankruptcy Filings and Foreclosure Starts

Source: FRBNY Consumer Credit Panel/Equifax Data, years indicated.

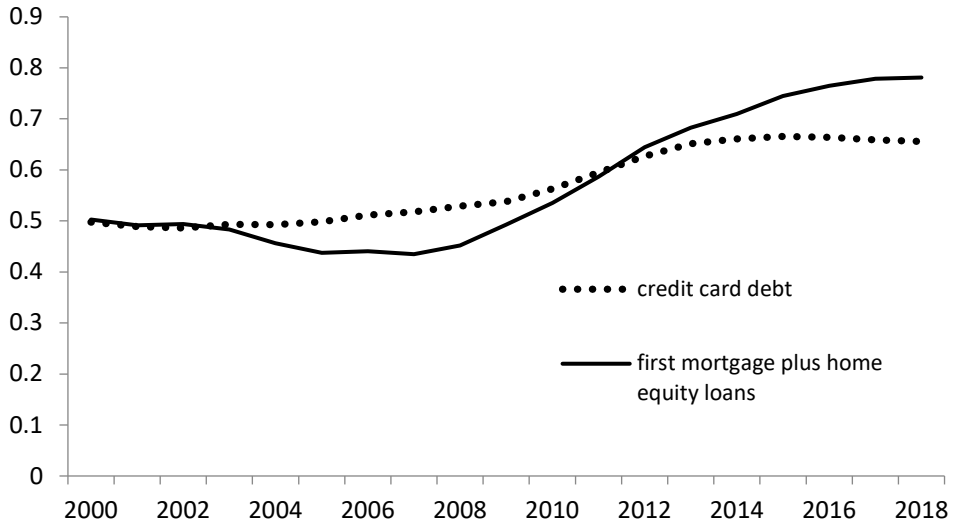

Figure 2. Bankcard and Mortgage Debt of the Elderly (65-85) Relative to the Near-Elderly (45-64)

Source: FRBNY Consumer Credit Panel/Equifax Data, years indicated.

Table 1. Annual bankruptcy filing and foreclosure rates for the elderly versus the near-elderly, before and after the 2005 bankruptcy reform (2003Q3-2005Q1, 2006Q2-2007Q4)

Bankruptcy filing rates:

	Before reform	After reform	Difference
Elderly (65-85)	0.0035	0.0016	-0.0019 (-54%)
Near-elderly (45-64)	0.0084	0.0035	-0.0050 (-59%)
Diff-in-diff			0.0031

Foreclosure rates:

	Before reform	After reform	Difference
Elderly (65-85)	0.0041	0.0048	0.0007 (17%)
Near-elderly (45-64)	0.0054	0.0069	0.0014 (26%)
Diff-in-diff			-0.00076

Source: FRBNY Consumer Credit Panel/Equifax Data, years indicated.

Table 2. Annual bankruptcy filing rates and foreclosure rates for the elderly versus the near-elderly, before and after the 2008 financial crisis (2006Q3-2009Q4)

Bankruptcy filing rates:

	Before crisis	After crisis	Difference
Elderly (65-85)	0.0018	0.0026	0.0008 (48%)
Near-elderly (45-64)	0.0038	0.0066	0.0028 (74%)
Diff-in-diff			-0.0020

Foreclosure rates:

	Before crisis	After crisis	Difference
Elderly (65-85)	0.0048	0.0083	0.0035 (74%)
Near-elderly (45-64)	0.0076	0.016	0.0083 (108%)
Diff-in-diff			-0.0047

Source: FRBNY Consumer Credit Panel/Equifax Data, years indicated.

Table 3. Results of probit regressions explaining annual bankruptcy filings and foreclosure starts, before and after the 2005 bankruptcy reform (Figures are marginal effects, with *p* values in parentheses.)

	Bankruptcy filings (1)	Foreclosure starts (2)
Post-Reform	-0.00061	2.7e-6
	(0.000)	(0.000)
Elderly*Post-Reform	0.00011	9.7e-7
	(0.075)	(0.94)
Lagged bankcard debt ($000)	4.5e-5	-2.4e-6
	(0.000)	(0.000)
Lagged auto loan ($000)	3.8e-6	-5.7e-7
	(0.000)	(0.20)
Lagged mortgage debt ($000)	-3.7e-8	4.4e-7
	(0.70)	(0.000)
Risk categories	X	X
Age fixed effects	X	X
State fixed effects	X	X
N	4.2 million	1.7 million
Time period	1999Q1-2005Q2, 2006Q2-2007Q4	1999Q1-2005Q2, 2006Q2-2007Q4

Source: FRBNY Consumer Credit Panel/Equifax Data, years indicated.

Table 4. Results of probit regressions explaining annual bankruptcy filings and foreclosure starts, before and after the 2008 financial crisis (2006Q3-2009Q4)

	Bankruptcy filings (1)	Foreclosure starts (2)
Post-Crisis	2.9e-4	1.4e-04
	(0.000)	(0.000)
Elderly*Post-Crisis	-8.9e-5	-2.2e-5
	(0.094)	(0.35)
Lagged bankcard debt	4.6e-5	-4.1e-6
($000)	(0.000)	(0.000)
Lagged auto loan	6.8e-6	-1.8e-6
($000)	(0.000)	(0.018)
Lagged mortgage debt	4.8e-7	1.2e-6
($000)	(0.000)	(0.000)
Risk categories	X	X
Age fixed effects	X	X
State fixed effects	X	X
N	3.9 million	1.7 million
Time period	2006Q3-2009Q4	2006Q3-2009Q4

Note: Figures are marginal effects, with *p* values in parentheses.

Source: FRBNY Consumer Credit Panel/Equifax Data, years indicated.

Table 5. Results of probit regressions explaining annual bankruptcy filings and foreclosure starts, 2000-2012

	Bankruptcy filings (1)	Foreclosure starts (2)
Elderly*Post-Reform	0.00014	-2.6e-5
	(0.049)	(0.31)
Elderly*Post-Crisis	-0.00015	-2.4e-5
	(0.019)	(0.31)
Lagged bankcard	6.1e-5	-6.0e-5
debt ($000)	(0.000)	(0.000)
Lagged auto loan	6.2e-6	-4.0e-6
($000)	(0.000)	(0.000)
Lagged mortgage	8.0e-7	1.3e-6
debt ($000)	(0.000)	(0.000)
Age fixed effects	X	X
State fixed effects	X	X
Quarter fixed effects	X	X
N	13.2 million	5.4 million
Time period	2000Q1-2005Q2, 2006Q2-2012Q4	2000Q1-2005Q2, 2006Q2-2012Q4

Note: Figures are marginal effects, with *p* values in parentheses.

Source: FRBNY Consumer Credit Panel/Equifax Data, years indicated.

Appendix Table 1. Summary Statistics

	Bankruptcy reform sample		Financial crisis sample	
	Bankruptcy	Foreclosure start	Bankruptcy	Foreclosure start
Bankruptcy filing rate (annual)	0.0048 (0.14)	0.0057 (0.15)	0.0044 (0.13)	0.011 (0.21)
Foreclosure start rate (annual)	0.0068 (0.16)	0.0059 (0.15)	0.0084 (0.18)	0.0112 (0.21)
Post	0.52 (0.50)	0.528 (0.499)	0.58 (0.49)	0.58 (0.49)
Fraction of individuals >= 65	0.32 (0.47)	0.186 (0.389)	0.32 (0.47)	0.20 (0.40)
Age	59.9 (11)	56.7 (8.8)	60.1 (11)	57.2 (8.9)
Bankcard debt ($000)	3.9 (8.0)	6.16 (9.8)	3.8 (7.8)	6.12 (9.63)
Auto loan ($000)	2.15 (5.7)	3.4 (6.9)	2.0 (4.9)	3.12 (6.09)
Mortgage ($000)	53 (113)	128 (148)	59.0 (124)	141 (160)
N	4.6 million	1.8 million	4.3 million	1.7 million
Time period	2003Q3-2005Q1, 2006Q2-2007Q4	2003Q3-2005Q1, 2006Q2-2007Q4	2006Q3-2009Q4	2006Q3-2009Q4

Note: Figures are means, with standard deviations in parentheses. The foreclosure start samples include only individuals with positive mortgage debt.

Source: FRBNY Consumer Credit Panel/Equifax Data, years indicated.