THE CREDIT MARKET CONSEQUENCES OF JOB DISPLACEMENT

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Abstract—This paper studies the role of job displacement in the household bankruptcy decision. Using an event-study methodology, I find that NLSY respondents are over three times more likely to file for bankruptcy immediately following a job loss. Using county-level data, I find similar magnitudes in the aggregate, with significant effects lasting two to three years. The results suggest that unemployment spells can have significant long-term consequences on households’ credit market outcomes.

I. Introduction

The length of unemployment spells in the United States reached historical highs during the Great Recession, with average unemployment durations of more than forty weeks reported in 2012 by the Bureau of Labor Statistics. Unemployment spells resulting from job displacement have been shown to have considerable and persistent negative impacts on earnings (Jacobson, La Londe, & Sullivan, 1993). More broadly, recent research has documented decreased consumption, greater marital discord, and even heightened mortality (Crossley, 2008; Charles & Stephens, 2004; Sullivan & von Wachter, 2009). Notably, the decline in consumption around job displacement is attenuated relative to the decline in earnings, which must be accommodated by reduced savings or increased indebtedness, or both. This paper explores the impact of job displacement and persistent income shocks on credit markets through the household bankruptcy decision.

More than two-thirds of bankruptcy filers cite the loss of a job or other source of income as the main reason for filing, by far the most commonly provided motive (Sullivan, Warren, & Westbrook, 1999). These survey findings form the basis for the claim that unanticipated adverse events such as job loss, divorce, or health crises cause bankruptcy. Yet empirically there exists little well-identified evidence linking household shocks to personal bankruptcy. For instance, Domowitz and Sartain (1999) and Fay, Hurst, and White (2002) find limited or no support for income shocks influencing the likelihood or timing of bankruptcy filing. In this paper, I provide a formal test of the adverse events hypothesis using individual-level data from the National Longitudinal Survey of Youth (NLSY) and county aggregate data collected from the U.S. courts.

The panel design of the NLSY allows for careful control of the timing of income shocks in an event study framework, while detailed information on respondents’ assets, debts, and state of residence provides a high-quality estimate of the financial benefit of filing. Unlike previous research on bankruptcy, this event study methodology explicitly addresses the source of exogenous variation and allows for estimation of preshock differences in bankruptcy likelihoods. Using this approach, I find that households are more than three times as likely to file for bankruptcy in the year immediately following a job displacement. This heightened likelihood is equivalent in regression terms to increasing indebtedness by $24,000, or 1.1 standard deviations of the financial benefit to filing. Bankruptcy risk then declines in magnitude but persists for two to three more years.

In the context of a forward-looking model, having enough debt such that there is a financial benefit to bankruptcy is a necessary but not sufficient condition for filing. Similarly, even in a model with adverse event shocks, individuals may optimally delay their response until uncertainty about the permanence of the shock is resolved. Thus, a dynamic model of personal bankruptcy provides three key predictions. First, households may respond to the same shock differently depending on their financial benefit from filing. Second, the bankruptcy decision depends on both the magnitude and the expected persistence of the income shock, conditional on the financial benefit from filing. Third, job separations and other income shocks can lead to lagged responses of bankruptcy filing.

The persistence of heightened bankruptcy risk after displacement documented in the NLSY is consistent with these dynamic models, which formalize the option value to delaying filing. I further show that the bankruptcy response to income shocks is most pronounced for those with the largest financial benefit from filing and the largest outstanding amounts of debt. Although the results confirm that individuals with a greater financial benefit to file are more likely to do so, the timing of their decision depends crucially on the timing of income shocks. These findings complement and extend previous research on the personal bankruptcy decision (e.g., Domowitz & Sartain, 1999; Gan & Sabarwal, 2005).

Although the NLSY is the best available panel data to study bankruptcy, its small sample size does not yield the statistical power necessary to distinguish the heterogeneous effects of job loss based on the expected duration of the displacement. To examine these issues, I use county-level data from 1980 to 2004 to estimate the aggregate relationship between bankruptcy and job loss. Using a Bartik-style shift-share instrument of industry composition for demand-driven changes in jobs, I find that 1,000 additional (net) job losses are associated with a fourfold increase in the county-level bankruptcy rate and that the effects of job loss persist...
for two years, corroborating the individual-level results using the NLSY.

To assess the magnitudes of the estimates, I use data from mass layoffs to conduct a back-of-the-envelope calculation of the impact of insured displacements on creditors’ balance sheets. Controlling for county and year fixed effects and county-specific time trends, I find that 1,000 mass layoffs are associated with five additional bankruptcies. Based on this estimate, along with the fact that the average amount of debt discharged in bankruptcy is $140,000, I calculate that each insured displacement costs creditors about $600 and that the 377,000 mass layoffs of 2004 cost creditors about $240 million through bankruptcy discharge.

These two complementary empirical analyses at the micro and aggregate levels contribute to the literature on job loss by providing new evidence that the consequences of displacement extend into the broader macroeconomy through the credit market (Hsu, Matsa, & Melzer, 2018). In a similar context, Sullivan (2008) finds that households increase their unsecured borrowing via credit cards in response to a short-term earnings shock. Although unemployment spells are traditionally brief (on average, eight weeks between 1980 and 2004 in the NLSY), these short-term shocks can have large long-term consequences on a worker’s well-being. This is especially true when the associated income shocks are more persistent than anticipated. The results presented here raise the question of why households are unable to fully insure against or smooth consumption around these shocks.

In addition, the paper clarifies the sometimes misleading dichotomy between adverse events and strategic incentives to file for bankruptcy. A considerable amount of research has established that households respond strategically (or optimally) to changes in the insurance value of the bankruptcy option through a range of financial and nonfinancial choices (Gross & Notowidigdo, 2011; Mahoney, 2015; Traczyk, 2011; Burns & Stoddard, 2012), despite limited evidence that these changes in the insurance value affect actual bankruptcy filings (Agarwal, Liu, & Mielnicki, 2005; Lefgren & McIntyre, 2009). Furthermore, by limiting the downside risk associated with borrowing, bankruptcy laws create an incentive for individuals to increase their indebtedness. This paper takes the potential moral hazard as given and instead focuses on documenting the role of adverse events in the likelihood and timing of personal bankruptcy conditional on financial benefit, as well as showing that individuals with greater financial benefit to filing are indeed more likely to do so. Notably, these findings do not rule out strategic behavior on the part of borrowers or bankruptcy filers. The evidence suggests that households respond to adverse events by filing for bankruptcy not in simple myopic fashion but rather timed to maximize the value of filing.

The next section describes the institutional details of filing for bankruptcy and provides predictions from a dynamic forward-looking model about whether and when households choose to file. Section III describes the data, the NLSY, and the event study methods used to identify the relationship between the timing of job loss and the timing of bankruptcy. An analysis of aggregate trends in bankruptcy using county-level data and a shift-share instrument is presented in section IV. Section V concludes.

II. Institutional Details and Conceptual Framework

A. The Costs and Benefits of Filing for Bankruptcy

The empirical analysis of this paper focuses on the time period prior to the passage of the Bankruptcy Abuse Prevention and Consumer Protection Act (BAPCPA) of 2005, which reformed U.S. bankruptcy law.1 Between 1980 and 2004, when the bankruptcy code was largely unchanged, filing rates increased from 2.0 per 1,000 working-age adults to 8.5 per 1,000. Households were able to choose between two options for resolving outstanding debts in bankruptcy court.2

The first option, known as Chapter 7, permitted full discharge of allowable debts after deducting nonexempt assets. Back taxes, alimony, child support, and student loans are generally not dischargeable liabilities, but all other unsecured debts are discharged under Chapter 7 rules. In theory, under Chapter 7, any nonexempt assets are forfeited to pay off these debts. In practice, however, nonexempt assets usually amount to less than 5% of all debts recovered by creditors (Livshits, MacGee, & Tertilt, 2007).

The alternative to filing for discharge is Chapter 13, a reorganization of debts worked out through the bankruptcy court. These repayment plans are usually scheduled for three to five years; however, most Chapter 13 filers fall behind and many refile in Chapter 7 (see Eraslan et al., 2017). Individuals are not allowed to file again for seven years if filing Chapter 7, but they can refile sooner if filing Chapter 13.3

In addition to the discharge of eligible debts, another benefit to filing is the suspension of all garnishment and other debt collection techniques. The tangible costs of filing are legal and processing fees on the order of $500 to $1,500, a portion of which must be paid up front (Gross, Notowidigdo, & Wang, 2014). The most costly aspect of bankruptcy is the flag placed on one’s credit report, which is present for up to ten years and has a strong impact on both access to credit and the price of credit (Musto, 2004; Fisher & Lyons, 2010; Han & Li, 2011).

An often-discussed intangible cost of filing is the role of stigma, the emotional punishment inflicted by oneself or one’s peers for filing for bankruptcy. While there have been claims that declining stigma can explain some of

1See Ashcraft, Dick, and Morgan (2007) for more on the reforms of BAPCPA. Notably, some households no longer have the choice of chapter due to means testing, which prohibits high-income filers from receiving a full discharge. However, the new bankruptcy rules have not altered the fundamental choices made by the vast majority of at-risk households regarding the timing of the filing decision (Cornwell & Xu, 2014).

2Outside the legal system, households can simply cease making payments, thereby forcing creditors to garnish wages or attach liens to property (Dawsey & Ausubel, 2004).

3This time between filings has been extended to nine years by the passage of BAPCPA in 2005.
the recent growth in bankruptcy filing (Fay et al., 2002; Gross & Souleles, 2002), subjective survey research indicates that individuals’ distaste for bankruptcy has been relatively constant over time (Sullivan, Warren, & Westbrook, 2006).

Thus, households with negative wealth net of exemptions must weigh the benefits (debt discharge) and costs (access and price of future credit, forfeiture of assets, stigma) against the alternative of not filing and repaying their outstanding debts. Intuitively, households that experience a sufficiently large negative deviation from average lifetime expected earnings such that debt repayment is more painful than the costs of filing should optimally file for bankruptcy. The decision is heavily influenced by both the amount of outstanding debt and the magnitude and persistence of the income shock. This intuition is described in more detail in the next section.

B. Conceptual Framework

A number of recent papers have solved dynamic structural models of the bankruptcy decision, improving our understanding of the behavior of borrowers and banks in a lending environment that includes the possibility of default. In online appendix A, I provide a simplified synthesis of these types of models, focusing on income shocks and the default decision.

Dynamic forward-looking models along these lines yield two key predictions. First, job separations and other income shocks can lead to lagged responses of bankruptcy filing, in addition to the obvious immediate filing response. Second, the bankruptcy decision depends on both the magnitude and the expected persistence of the income shock. Simply put, strategic agents respond to adverse events optimally in both their borrowing patterns and the likelihood and timing of bankruptcy. Thus, in a framework with optimizing forward-looking borrowers, every default has elements of both strategic borrowing and adverse events behavior. However, shocks that predict prolonged periods of low income are more likely to lead to defaults than more transitory shocks.

These dynamic models also reveal that changes in expectations can have a direct impact on the bankruptcy decision. When unemployment is expected to be more persistent, a larger fraction of households are expected to file for bankruptcy. Measures used in previous studies to proxy for stigma, such as prior filing rates in the same state, may be contaminated by other households’ expectations about future earnings.

The central prediction of dynamic models of personal bankruptcy is that the timing and likelihood of bankruptcy are determined by the expected and realized magnitude and persistence of income and employment shocks. Thus, negative household shocks can have delayed effects on the bankruptcy decision. These insights have been recognized in the context of general equilibrium models but have not been taken directly to the data. The next two sections investigate this central prediction empirically, using both individual and aggregate data as tests of the relationship between job separations and bankruptcy.

III. Microdata Analysis

A. The NLSY

The National Longitudinal Survey of Youth initiated a panel study of young people aged 14 to 21 in 1979. The survey was conducted annually until 1994 and has been biennial since then. Questions about education, employment, family formation and dissolution, and respondents’ health have been asked in every wave of the survey. When all respondents reached the legal age of adulthood in 1985, they were asked about their assets and debts independent of their parents’ resources. These questions have expanded as respondents have accumulated diverse assets and liabilities, such as 401(k) plans, stock portfolios, outstanding auto loans, and mortgages.

The rich set of detailed questions on assets and debts can be used to estimate the financial benefit to filing for bankruptcy for each respondent in each year. I obtained the restricted license NLSY data in order to identify the respondents’ state of residence that determines the relevant bankruptcy exemptions. State-level measures of the amounts and types of exemptions (home, auto, other) were collected from various annual issues of Nolo bankruptcy publications. I combine information on secured and unsecured debts to measure household indebtedness, as well as respondents’ exempt and nonexempt assets to measure household wealth. Thus, the benefit of filing for bankruptcy in any given year can be estimated for each individual by deducting assets (net of state-specific exemptions) from discharge-eligible debts. Throughout the paper, preshock values of the financial benefit to filing are included because of their potential endogeneity to the income shock (see, e.g., Charles & Stephens, 2004), and the concern that simultaneous measures of financial benefit may instead reflect postbankruptcy outcomes.

In the wave of the survey conducted in 2004, respondents were asked if they had ever filed for personal bankruptcy and, if so, in what year. Respondents also provided the chapter of filing and whether the filing was due to a business failure. In the analysis that follows, I combine Chapter 7 and Chapter 13 filings in the baseline microlevel analysis. I made this choice because of small sample sizes for a given chapter, but separating the analysis by chapter (shown in the online appendix)

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4 An exception is Livshits et al. (2007), which explores long-term changes in shock persistence in simulation exercises to explain recent increases in personal bankruptcy.

5 Asset and debt variables have been top-coded for confidentiality purposes, and I apply the lowest consistent top code to all wealth variables. This affects many of the questions regarding asset and debt variables. Unfortunately, the uncensored wealth responses are not available, even with the restricted license data set. All dollar value variables are adjusted by the CPI-U to real values with the year 2000 as the base year. For more information on the wealth questions in NLSY79, see Zagorsky (1999).

6 The restricted license application can be obtained through the BLS website. I thank the BLS staff for their assistance.

7 Because of the timing of this question, my sample consists of respondents who answered the NLSY survey in 2004.
yields essentially identical event study patterns. In addition, I focus exclusively on nonbusiness filings by omitting any filings classified as a Chapter 11 business reorganization or where the respondent reported that filing was due to the failure of a business.

The two main critiques of retrospective survey data on bankruptcy are that individuals may not remember the precise timing of their filing date and that bankruptcies may be underreported. In figure 1, I confirm that respondents accurately remember the year in which they filed for bankruptcy. Figure 1 shows the total debt reported by bankruptcy filers, plotted against the relative years before or after bankruptcy, relative to the debts of those who never filed. The figure shows that total debts fall by $15,000 upon discharge, consistent with accurate recall. In online appendix B, I provide further assessment of the quality of participants’ retrospective responses to the bankruptcy questions in 2004, including evidence that bankruptcy filers lost their homes around the time of filing. In online appendix figure 1, I compare the national bankruptcy rate with those implied by survey respondents in the NLSY, the Panel Study of Income Dynamics (PSID) and the Survey of Consumer Finances (SCF). Although the NLSY follows only one cohort over time, the level and trend of the filing rate are consistent with aggregate patterns, albeit slightly below the national rate and slightly above that of the filing rate are consistent with aggregate patterns, albeit

Figure 1.—Total Debts of Bankruptcy Filers Relative to Nonfilers, by Relative Time of Bankruptcy Shock

The figure presents relative time coefficients from an OLS regression of total debts on the timing of bankruptcy filing. See appendix B for details. Controls include age, race, education, and state and year fixed effects. Dashed lines represent 95% confidence interval. Nonfiler mean total debts are $36,961. The figure shows a clear break in indebtedness around the timing of reported bankruptcy filing.

B. An Event Study Approach to the Bankruptcy Decision

To identify the timing of filing for bankruptcy around plausibly exogenous shocks, I follow the event study framework of Jacobson, LaLonde, and Sullivan (1993), which has been used in many contexts related to job loss (see, e.g., Sullivan & von Wachter, 2009). In this framework, regressions take the form

\[ Y_{it} = \sum_{j=-s}^{s} \alpha_j \times 1[(t - \tau_j) = j] + \beta X_{it} + \gamma_t + \epsilon_{it}, \]

where \( Y_{it} \) is an indicator for whether the respondent filed for bankruptcy in year \( t \), \( \gamma_t \) are year fixed effects, and the vector \( X_{it} \) is a set of individual-level characteristics. The coefficients of interest are \( \alpha_j \), which reflect the time pattern of the response to the shock \( \tau_j \). During the observation window \((-s, s)\), each \( \alpha_j \) represents the effect on bankruptcy \( j \) years before or after the shock.

An event study methodology is a natural approach to studying the impact of adverse events on the likelihood of filing for bankruptcy. This approach extends beyond a difference-in-difference estimator to reflect that the precise timing of discrete shocks conveys useful information in predicting household decisions. With a binary shock, such as job displacement, rather than omitting a time period, we can estimate all event time coefficients relative to those who never experienced a shock. The event study framework also allows for formally testing for the presence of pretrends. In what follows, I report both the estimated coefficients and a test of equality among the preshock bankruptcy coefficients.

Equation (1) is estimated using a logit model, and average marginal effects are reported in the tables and figures. The individual-level characteristics, \( X_{it} \), are a full set of age dummies, race, and education. The core results presented also include a complete set of state and year fixed effects, as well as a quadratic in the preshock financial benefit to filing (defined above). Standard errors are clustered to allow for arbitrary heteroskedasticity and correlation of errors over time for individuals.

During the period of analysis, the choice of chapter was unrestricted, with two-thirds of filers reporting that they filed for Chapter 7, and the remainder filing Chapter 13. I show the event study results separately by Chapter in appendix figure 8 and distinguish between chapters in the aggregate analysis in section IV. Recent work by Dobbie and Song (2015) has emphasized potentially different welfare consequences of bankruptcy chapters.

As discussed in online appendix B, the presence of measurement error in the retrospective response to the year of filing may induce a delayed response to employment shocks and lead to imprecision in the comparisons of the coefficients before and after the shock.
controls for age, race, education, state and year fixed effects, and a quadratic in financial benefit. Dashed lines represent 95% confidence interval. Coefficients are reported in Table 1.

**Figure 2.**—Probability of Bankruptcy Filing for Men by Relative Time from UI Shock

The figure presents average marginal effect coefficients from a logit regression of bankruptcy filing on the timing of male unemployment shocks. See the text for definitions of spells. The regression includes controls for age, race, education, state and year fixed effects, and a quadratic in financial benefit. The sample is restricted to those working full-time in the period prior to job loss.

**Job displacement predicts bankruptcy.** Figure 2 shows the pattern of the relative year coefficients for male job losses, defined as the first time on unemployment insurance (UI), with the coefficients reported in column 1 of Table 1. The sample consists of all respondents with a male household member who worked full time, full year in the prior year prior to a UI spell, with the control group of male workers who never experienced a UI spell. Note that if a worker experiences a job separation but then quickly finds work without UI receipt, this separation is coded as “untreated.” In addition, individuals who are fired for cause are unable to collect UI; these types of separations, which may be indicative of broader problems (health, financial, or otherwise) that the displaced worker faces, are not included in this analysis. The marginal effect coefficients are relative to the group of respondents who have never received UI benefits (never experienced job loss while covered by unemployment insurance) and have a baseline bankruptcy filing rate of 4 per 1,000 individuals.

There is a clear spike in the relative time coefficient in the year in which the job loss is experienced. Households with a male worker experiencing a job displacement are more than three times as likely to file for bankruptcy. The heightened likelihood of bankruptcy remains significantly different from zero in the two to three years after bankruptcy. Subsequent years are no longer significantly different from the group that never experienced a job loss.16

To put this increased likelihood in perspective, it is useful to compare the regression coefficient on the financial benefit to filing (not shown) with the coefficient on the relative year of job displacement. The effect of the relative year of job loss on the likelihood of filing for bankruptcy is equivalent in regression terms to an increase in indebtedness of $24,000, or 1.1 standard deviations of the financial benefit to filing measure. Thus, the shock of job separation represents a substantial heightening of bankruptcy risk, on the same order of magnitude as a large negative shock to household net worth.

In addition, prior to job separation, there is no difference in the likelihood of filing for bankruptcy between future job losers and the never unemployed. Although the coefficient for the period prior to job displacement is close to statistically significant, this is likely due to the presence of measurement error in retrospective survey responses (see appendix B for more detail). The estimated coefficients of the predisplacement relative time indicators are not significantly different from 0, as shown by the joint test in the next-to-last row of Table 1 (p = 0.93). Furthermore, the coefficient for the period immediately prior to job loss (−1 to −2 years) is statistically different from the time of job loss (p = 0.02, last row of Table 1).

With a marginal coefficient twice as large and a t-statistic over 5 (relative to the nondisplaced), the effect is clearly largest at the time of job displacement. Thus, the bankruptcy hazard in the year of job separation is not only significantly different from the nonseparation control group, but is also different from the years prior to job separation. This result highlights the advantages of the event study methodology: The years prior to job separation serve as a placebo test of the displaced (with an omitted relative time category) yield qualitatively similar time patterns around the displacement event. Results are available on request.

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15 I focus on the first displacement because of the potential endogeneity of subsequent displacements. See Stevens (1997) for a careful analysis of the role of additional displacements on earnings and wage losses, which likely drives my finding of heightened bankruptcy risk in the out-years.

16 Note that in the out-years, many years both before and after job displacement, the displaced have a higher filing rate than the nondisplaced. This finding suggests that, not surprisingly, the nondisplaced are not a perfect control group for the displaced and that other determinants of bankruptcy are omitted from this analysis. The nondisplaced are used to pin down the fixed effects and financial benefit coefficients, but regressions using only the displaced (with an omitted relative time category) yield qualitatively similar time patterns around the displacement event. Results are available on request.
the impact of job displacement on bankruptcy, confirming that job separations are indeed a shock to these households based on the timing of bankruptcy filing.

Figure 3 shows the relative job loss year coefficients for female job separations. These coefficients exhibit a similar pattern to those of men, with double the likelihood of filing in the year of job displacement and the year following displacement relative to those who are never displaced. However, the test of preseparation coefficients is weaker for women, as the test of the null of equality of the preseparation coefficient and the year of separation \( \alpha = \alpha_{-1} \) cannot be rejected \( (p = 0.34) \). While the statistical relationship is weaker, the pattern of coefficients is consistent with the timing of bankruptcy depending on the timing of job loss.

In the online appendix, I provide similar event study analyses for divorce and disability shocks—other adverse events that may contribute to bankruptcy. The event study coefficients suggest that divorce both precedes and follows bankruptcy, but it is not clear that causality runs in either direction. While there is less power in the NLSY to detect an impact on bankruptcy from a disability shock, as the NLSY cohort is (for the most part) young and healthy, I find a significantly increased likelihood of bankruptcy at the time of the shock. Newly disabled individuals are more than twice as likely to file for bankruptcy in that period relative to those who never experience a disability event. The online appendix includes additional analysis and heterogeneity of the bankruptcy response to these adverse events.

**Heterogeneity of the bankruptcy response.** Given that indebtedness is a necessary condition to filing for bankruptcy, I next explore heterogeneous responses to unemployment shocks based on the level of the household’s indebtedness. As shown in figure 4, households with a positive financial benefit to filing for bankruptcy are much more responsive to a male unemployment shock, with a relative time coefficient in the year of the shock twice as large as the coefficient for households with no benefit to filing.\(^{17}\) That some households with no estimated financial benefit nonetheless file for bankruptcy suggests that financial distress can occur relatively quickly, as the measure of financial benefit is from one or two years prior. The corresponding regression estimates are in table 2.

It should also be reiterated that measurement error in the timing variables (UI shock and bankruptcy decision) and assets and debts variables leads to noisier estimates. Splitting the sample by financial benefit, not done elsewhere in the literature, yields a clear pattern in the bankruptcy likelihoods around the timing of a job displacement.

Similarly, in figure 5, households above the top quartile of indebtedness (in the survey, $40,000), are much more likely to file for bankruptcy in response to an unemployment shock than households that are less indebted. This heterogeneity is consistent with the theoretical framework in which households file for bankruptcy when it is advantageous to do so, but respond to new information about current and future income prospects. In addition, these heterogeneous patterns may be consistent with recent evidence of differential declines in the stigma associated with bankruptcy filing among higher-debt and higher-income households (Cohen-Cole & Duygan-Bump, 2008). The timing of male unemployment shocks is a strong predictor of the timing of the personal bankruptcy decision, especially among those who benefit most from filing.

\(^{17}\) The coefficient estimates from figures 4 and 5 are presented in table 2. Twenty-nine percent of person-years have a positive benefit to filing, exclusive of filing costs, for the purposes of this sample stratification. Using SCF data from 1992, White (1998) estimates that at least 15% of households had a positive benefit to filing.
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tent increase in the probability of filing for bankruptcy, which
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figure 7 splits the sample by the size of the preshock average
severity of the job separation. As a proxy for the
consumption commitments (Chetty & Szeidl, 2007) or differ-
a single-male household, which may reflect differences in
respond more strongly to a male unemployment shock than
as shown in appendix figure 6, married households appear to
spouses and the deviations from income expectations? First,
Levels are collected from county business patterns (CBP) from
using the midpoints of the ranges provided. Data limitations prevent the
classifications), which have changed over time. Some employment values
prior to bankruptcy—so-called bad-faith debts.
18 To the best of my knowledge, these county-level data have been used in
the recent literature only to address the consequences of expanded access to
casino gambling (Evans & Topoleski, 2002; Barron, Staten, & Wilshusen
19 Amendments have modified some exemption rules, and changes were
made in 1984 intended to limit write-offs from debts incurred immediately
prior to bankruptcy—so-called bad-faith debts.
20 These measures use the appropriate NAICS and SIC codes (two-digit
classifications), which have changed over time. Some employment values
in the CBP data are coded as a range for confidentiality purposes. I impute
using the midpoints of the ranges provided. Data limitations prevent the
to three years after filing. Finally, appendix figure 8 shows
that the relative time coefficients are similar for both chapter
7 (debt discharge) and Chapter 13 (debt reorganization) fil-
ers, supporting the decision to combine the two types of filers
in the baseline specification. If anything, Chapter 7 filers are
slightly more responsive to unemployment shocks relative to
those who file for a Chapter 13 debt renegotiation.

IV. Aggregate Analysis
While the results suggest a strong relationship between
job loss and bankruptcy, the NLSY follows only one cohort
over time, and the sample is not large enough to detect dif-
fences in the effects of job loss based on the severity of the
placement. I thus turn to an aggregate analysis to investi-
gate the relationship between job losses and bankruptcy using

Do the bankruptcy response patterns vary along other
dimensions of potential heterogeneity, including help from
spouses and the deviations from income expectations? First,
as shown in appendix figure 6, married households appear to
respond more strongly to a male unemployment shock than
a single-male household, which may reflect differences in
consumption commitments (Chetty & Szeidl, 2007) or differ-
ences in the severity of the job separation. As a proxy for the
severity of the separation relative to expectations, appendix
figure 7 splits the sample by the size of the preshock average
income. Relative to other below-median earners, those who
suffer an unemployment shock experience a large and persist-
ent increase in the probability of filing for bankruptcy, which
lasts four to five years after separation. In contrast, above-
median earners who suffer an unemployment shock have a
similar likelihood of filing for bankruptcy in the immediate
aftermath, but the effects are much less persistent in the two

<table>
<thead>
<tr>
<th>Relative Time</th>
<th>No Financial Benefit</th>
<th>Positive Financial Benefit</th>
<th>Below $40,000 Debt</th>
<th>Above $40,000 Debt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coefficients</td>
<td>SE</td>
<td>Coefficients</td>
<td>SE</td>
<td>Coefficients</td>
</tr>
<tr>
<td>7 or more years before</td>
<td>0.0023</td>
<td>0.0020</td>
<td>0.0052</td>
<td>0.0039</td>
</tr>
<tr>
<td>5–6 years before</td>
<td>−0.0006</td>
<td>0.0042</td>
<td>−0.0140</td>
<td>0.0116</td>
</tr>
<tr>
<td>3–4 years before</td>
<td>0.0002</td>
<td>0.0034</td>
<td>−0.0097</td>
<td>0.0086</td>
</tr>
<tr>
<td>1–2 years before</td>
<td>0.0018</td>
<td>0.0026</td>
<td>0.0034</td>
<td>0.0047</td>
</tr>
<tr>
<td>Year of event + 1 year after</td>
<td>0.0066</td>
<td>0.0016</td>
<td>0.0118</td>
<td>0.0035</td>
</tr>
<tr>
<td>2–3 years after</td>
<td>0.0053</td>
<td>0.0017</td>
<td>0.0001</td>
<td>0.0050</td>
</tr>
<tr>
<td>4–5 years after</td>
<td>0.0020</td>
<td>0.0024</td>
<td>0.0006</td>
<td>0.0046</td>
</tr>
<tr>
<td>6–7 years after</td>
<td>0.0044</td>
<td>0.0020</td>
<td>−0.0064</td>
<td>0.0054</td>
</tr>
<tr>
<td>8–9 years after</td>
<td>0.0016</td>
<td>0.0023</td>
<td>−0.0023</td>
<td>0.0049</td>
</tr>
<tr>
<td>10 or more years after</td>
<td>0.0040</td>
<td>0.0010</td>
<td>0.0038</td>
<td>0.0023</td>
</tr>
</tbody>
</table>

The table presents average marginal effects from logit model for bankruptcy filing. See the text for the definition of spells. Standard errors are clustered by individuals. Additional controls are race, age, education, and state and year fixed effects. The sample is restricted to those working full time in the period prior to job loss.
The theoretical framework described in section IIB suggests that the bankruptcy decision is made on the basis of new information. As such, in the specifications that follow, the change in the number of jobs is the independent variable of interest. I regress the total nonbusiness bankruptcy rate (measured per 1,000 residents) in county $c$ in year $t$, $Y_{ct}$, on the annual net change in the number of jobs per person, $\Delta Jobs_{ct} = Jobs_{ct} - Jobs_{ct-1}$, in the same county:

$$Y_{ct} = \beta \Delta Jobs_{ct} + \gamma_c + \mu_t + \kappa_c \times t + \epsilon_{ct}.$$  

To control for time and location differences, I include year dummies ($\mu_t$), fixed effects for all 3,135 counties ($\gamma_c$), and county-specific time trends ($\kappa_c \times t$). The year dummies remove any trends in bankruptcy filing at the national level, as well as any cyclical aggregate variation. The county-specific fixed effects partial out the time-invariant characteristics of counties to account for the fact that some counties may have more bankruptcies (per capita) or a higher share of Chapter 7 filings due to factors unrelated to employment shocks, while the county-specific time trends capture any local long-run patterns in filing rates.

Thus, the identifying variation is within-county variation in job growth over time relative to both county-specific and year-specific averages as well as within-county trends. By measuring bankruptcies as a per person rate and including county-level trends along with both time and county fixed effects, rather than solely using fluctuations in the business cycle, this specification is a particularly demanding test of the hypothesis that local fluctuations in employment have an impact on the local bankruptcy rate.

To address the concern that labor supply shocks may affect both bankruptcy rates and employment, I employ a Bartik-style shift-share instrument to isolate the component of the annual change in net jobs that can be attributed to labor demand. For example, an unobserved local health shock could lead to both a decline in employment and an increase in personal bankruptcy filing. The instrument is based on the preexisting industry share of jobs in a county (with 1980 as the base year) and the national percentage change in that industry from year to year. The Bartik (1991) procedure has been used extensively in labor economics (for a recent example, see Notowidigdo, 2011), but to my knowledge, it has not been used to test for bankruptcy responses to local labor demand shocks.

The results from the aggregate analysis are presented in table 3. All else equal, counties that experience more job losses have a greater number of bankruptcies. Column 1 shows that 1,000 additional jobs lost in a county lead to nearly a doubling of the bankruptcy rate (an additional 2.0 bankruptcies on a base rate of 2.7 per 1,000 residents), even after accounting for the fixed attributes of the county and the macroeconomic conditions in the year of observation. Column 2 uses the shift-share measure as an IV (with a first-stage $F$-statistic of 124.9, $p$-value < 0.001) and estimates a larger but noisier impact of job changes on local bankruptcy rates.

The larger coefficient in the IV specification relative to the OLS estimate may be a result of attenuation bias but may also reflect underlying bias in the OLS regression. In particular, the results from the OLS specification may in part

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22 Because of concerns related to heteroskedasticity across counties with different population sizes, all regressions using this specification are weighted based on the inverse of the estimated variance of the error term for the population in each county-year observation (see Solon, Haider, & Wooldridge, 2013). Results without weights are qualitatively similar and available on request. All standard errors are clustered to allow for arbitrary correlation at the county level.

23 In results not shown, I cannot reject a symmetric bankruptcy response to job gains and job losses. Given the fixed effects and time trends in the specification, the estimates are best interpreted as deviations from trends.
reflected a broader negative local shock that influences both employment and bankruptcy. The IV estimate is intended to address this concern, and the fact that the IV estimate is larger than the OLS estimate supports the view that OLS specifications of this relationship without a plausible instrument may be biased.

As a proxy for severe separations, I partition job changes into separate measures for the manufacturing and nonmanufacturing sectors. Manufacturing jobs are generally more likely to be unionized, have longer tenures, and provide better health care and pensions than nonmanufacturing jobs (Anderson & Meyer, 1994; Brown, 1989). These are also jobs where the accumulation of specific human capital may be particularly important in determining the costs of job separation (Topel, 1990; Carrington, 1993). Column 3 of table 3 separates the county-level changes in jobs by manufacturing and nonmanufacturing job changes. In this specification, with controls for county, year, and county-specific time trends, I cannot reject that the bankruptcy rate responds similarly to the loss of manufacturing and nonmanufacturing jobs.
layoffs lead to 5 additional bankruptcies, sharply increasing the bankruptcy rate by a factor of more than 2. Notably, as shown in columns 2 and 3, Chapter 7 filing rates appear to be much more strongly related to mass layoffs than Chapter 13 filing rates. These results on mass layoffs can be used for a back-of-the-envelope estimate of the economic impact of job losses on creditors’ balance sheets. Consider that the average bankruptcy filing discharges roughly $140,000 in debt.24 According to the BLS data, about 377,000 individuals were displaced through a mass layoff in 2004. Based on the estimated increase of 4.5 bankruptcies per 1,000 mass layoffs, this would lead to a total increase of 1,700 bankruptcies that could be attributed to mass layoffs through this methodology and a total debt discharge of $240 million. Each mass-layoff-displaced individual costs creditors roughly $600 through bankruptcy discharge, which in the aggregate can lead to substantial losses.

Comparing the results from the county-level and individual-level data, the instrumented county-level estimates are generally larger than the individual-level estimates. There are a few reasons why this might be the case. First, the measures of job separation are different, as the individual-level data focus only on insured unemployment spells, while the county-level data rely on a measure of net aggregate job changes. Next, as discussed in section IIIA, there may be underreporting or mistimed reporting of bankruptcy filings in the individual data, which would lead to attenuation. Finally, the county-level data may capture indirect effects of job losses on other participants of the local economy, whereas the individual-level analysis captures only direct effects.

V. Conclusion

Filing for personal bankruptcy has become so common that over 11% of NLSY households aged 39 to 48 have experienced it at some point in their lives. And yet economists know relatively little about the determinants of bankruptcy, due in large part to the lack of representative microlevel data with information on debts, assets, adverse events, and bankruptcies. This paper takes advantage of the retrospective bankruptcy question in the NLSY to identify the role that adverse events in general, and job loss in particular, play in the timing and likelihood of filing for bankruptcy.25

The results from both individual- and county-level analyses suggest a pattern of bankruptcy filing in response to negative labor market shocks, which is consistent with a dynamic forward-looking model of the household bankruptcy decision. In particular, although the durations of the unemployment shocks analyzed in this paper are brief, they potentially signal changes in expected permanent income. Although easing credit constraints should theoretically improve households’ ability to smooth consumption, there has been a marked increase in consumption volatility over the past 25 years (Keys, 2008). For some households, credit expansion clearly has not kept pace with the growth in earnings volatility as documented by Moffitt and Gottschalk (2002) and Shin and Solon (2011). Some income shocks are sufficiently large that households must file for bankruptcy and select a new consumption path.

Households’ bankruptcy response to unemployment spells further suggests that households use credit markets as a form of unemployment insurance. The results demonstrate a complementarity between unemployment insurance programs and personal bankruptcy, and thus examinations of the optimality of the UI system should include its impact on credit markets. Understanding how imperfect insurance markets interact with credit markets remains an area worthy of further investigation. For instance, a tripling of a region’s bankruptcy rate due to a labor demand shock is likely to affect lenders’ willingness to provide access to low-cost credit.

Overall, the results support the view that labor market shocks are crucial to understanding the timing and likelihood of personal bankruptcy. Consistent with the approach of Hsu et al. (2018) to describe the benefits to creditors from unemployment insurance as a positive externality in terms of repaid debts, the results here establish that the employment shock itself serves as a negative externality from a creditor’s standpoint.

REFERENCES


24 See the U.S. Court’s annual BAPCPA report to Congress for more details. This figure is the average “net scheduled debt,” which is the best available approximation of the amount of debt discharged.

25 Two data sets, the PSID and the NLSY, are the only longitudinal surveys available for research on bankruptcy that contain information on household shocks as well as rich detail on assets and debts in order to accurately calculate households’ financial benefit to filing. Note that even matching administrative records on employment (e.g., the Longitudinal Employer-Household Dynamics data set) to administrative bankruptcy records would not allow for estimates of the financial benefit of bankruptcy.