# Landlords as Lenders of Last Resort?
# Missed Housing Payments During Unemployment

Current Draft: August 2026

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**Abstract**

This paper examines how the option to miss housing payments helps households, especially renters, cope with job loss. While housing is a consumption commitment, meaning it is costly to adjust, housing payments can be considerably more flexible. There are three main results. First, missed payments are common after job loss, and renters' average reduction in housing expenditure is similar to that for nondurables. Second, the large majority of missed payments do not lead to eviction or a forced move, so the reduction in payments is a deferral rather than a step toward losing the home. Third, the resulting arrears are large, often 2 to 3 months of rent, and they accrue to renters who have little liquid wealth and limited access to credit. Missed payments are therefore an informal source of liquidity for households with few alternatives. I then develop a stylized model of rent accommodations that explains why landlords supply this liquidity.

*Keywords:* housing, renters, consumption smoothing, job loss, credit, eviction, unemployment
*JEL* D14, E21, E24, G51, J64

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# 1. Introduction

Housing is most households' largest expenditure, and it can be difficult to adjust. Moving is costly, and the rental lease or mortgage fixes the contractual monthly payment. When households face income losses, this inflexibility inhibits consumption smoothing, amplifies risk aversion, and raises the welfare cost of moderate shocks (Chetty and Szeidl, 2007).[2] Committed housing expenditures matter most for renters, who, relative to owners, spend a higher share of income on housing and have less savings or access to credit.

This paper shows that actual housing payments are far more flexible than the contractual consumption commitment implies. Although I report results for both renters and owners, the paper focuses on renters, who miss payments more often. When facing job loss, renters report falling behind on housing payments about as often as they borrow or reduce savings.[3] Most research on renters' missed payments focuses on the terminal outcome: eviction (Desmond and Kimbro, 2015; Collinson et al., 2024, 2025). In contrast, I focus on the benefits of missed payments as a source of liquidity. I measure this liquidity against what would be available if the household had paid in full. For job losers, missing a payment relaxes the household budget constraint by reducing housing expenditure, freeing resources for other spending in the low-income period. The unpaid rent remains legally owed, so the arrears are informal credit provided by the landlord, and because much of the balance is never collected, missed payments are partly insurance that reduces total rent payments for tenants facing shocks. I ask how far housing payments fall after job loss, how often the missed payments lead to eviction, whether the arrears are repaid, and why landlords accommodate them.

The primary data are from two household panel surveys. The 1991–2008 panels of the Survey of Income and Program Participation (SIPP) contain information on job loss and indicators for missed housing payments, evictions, and moves. The second, the RAND American Life Panel (ALP) Financial Crisis Surveys, is a monthly and later quarterly panel that contains monthly expenditures, including housing. Survey data have an advantage over financial account data for this application: rent over this period is largely paid in cash, by check, or by money order, and many of the households that miss payments are unbanked or underbanked.[4]

[2]The assumption is explicit in Chetty and Szeidl (2016), which uses rental housing as its example: the agent "pays for the commitment consumption service every period (e.g., as with rental housing)."

[3]Among job-losing renters in the American Life Panel who report losing income to unemployment, 28% report falling behind on housing, 31% report borrowing, and 30% report reducing savings.

[4]Zhang (2016) uses a representative survey from 2014 and reports that, through the mid-2010s, more than 75% of rent payments were made through paper-based methods, with an even higher share for low-income households, and Greene and Stavins (2021) reports similar rates for bill payments among lower-income and underbanked consumers. In transaction or bank account data, cash payments and money orders may be

Households, especially renters, often miss payments following job loss, and the average reduction in renters' housing expenditure is similar to that for nondurables. Comparing observably similar SIPP households, job loss raises the probability of missing a payment by 9.3 percentage points (pp) for renters and 6.4pp for owners. On the intensive margin, renters' housing expenditure falls by 7.5% in the two quarters following job loss and 3.6% for owners. For comparison, nondurable expenditure is known to decline by 7–10% upon job loss (Gruber, 1997; East and Kuka, 2015; Ganong and Noel, 2019), a result which I replicate. The declines are not driven by moves but instead by a subset of households that miss payments. The median household continues to pay in full during the two quarters after job loss, while 10% of households reduce payments by at least 32% for renters and 10% for owners. These reductions provide a source of liquidity relative to full payment.

Most missed payments do not lead to eviction or a forced move, which is what makes them a source of liquidity rather than a step toward losing the home. In the SIPP, more than 90% of renters who miss payments in response to job loss are not formally evicted. I corroborate this rate with external evidence from the American Housing Survey. Owners who miss payments likewise rarely face foreclosure. Evictions, however, may be underreported or the data may not capture informal evictions (forced moves). Conditional on observables, job-losing renters who miss payments are no more likely to move than those who do not miss payments. Additionally, using the ALP's reported reasons for moving, 6.4% of renters' missed payments end in a self-reported eviction, and counting every affordability-related move (wanted lower rent, could not afford rent) as an informal eviction gives an upper bound of 20% on the share of missed payments that end in eviction.

The liquidity from rent arrears is substantial, and it reaches renters who have few other sources of liquidity. In the ALP, renters who miss a payment often miss again within the year and less than 20% make an observable catch-up payment, though the samples are small. The Federal Reserve's Survey of Household Economics and Decisionmaking puts the rent arrears among those who owe at about 2 to 3 months of rent, with roughly half of arrears resolved within the year. The amount of rent arrears accrued is similar to or larger than existing estimates of the use of formal credit by the broader population of job losers. Moreover, this informal credit may be the only source of liquidity available to these households, as renters missing payments have little to no liquid assets, report constrained access to formal credit markets, and do not increase credit card borrowing upon job loss.

missing and paper checks are often categorized as miscellaneous payments (Baker, 2018; Ganong and Noel, 2019; Baugh et al., 2021). In the SIPP, 32% of households with missed housing payments report no money in any financial account.

The next section asks why landlords supply this liquidity rather than requiring full payments or immediately evicting. I develop a stylized model of rent accommodations, in which partial payments arise as a mutually beneficial arrangement between landlords and tenants. Three features give rise to these accommodations. First, eviction is costly for landlords (legal fees, turnover costs), so they are willing to offer informal credit even when it is not fully repaid. Second, landlords have an enforcement mechanism (declining to renew the lease) that can induce partial repayment. Third, I assume landlords observe the shock households face, reflecting the close communication between landlords and delinquent tenants (Balzarini and Boyd, 2021). Observability allows landlords to target accommodations at the appropriate renters, and I show that removing observability can limit or unravel landlords' willingness to accommodate. These three features also explain why landlords, as opposed to third parties, are the ones to supply this liquidity.

The model generates three regions: households facing small shocks pay in full, those with moderate shocks informally borrow from the landlord with partial repayment in the next period, and those facing large shocks are evicted. Empirical tests support this sorting. Unemployment spells are shortest for renters who pay in full, longer for those missing payments, and longest for those who are evicted. Consistent with the importance of observability, I find that a missed payment less often escalates to a threat of eviction for landlords of smaller properties and for larger properties with an owner or manager on site. Relative to a regime where all missed payments lead to eviction, allowing partial payments benefits both parties. Tenants gain the liquidity of a deferred and partly forgiven payment, which facilitates consumption smoothing for households with little access to credit. Landlords gain by avoiding the costs of eviction, so with competitive pricing the equilibrium rent would be lower than under an eviction-only regime.

This paper contributes to several research areas. First, by focusing on missed payments as a source of liquidity, this paper adds to a growing literature on evictions among renters. Collinson et al. (2024) and Collinson et al. (2025) show evictions generate negative outcomes in labor markets, credit markets, health, and education. Another recent paper, Humphries et al. (2024), uses landlord ledger data from low-income rental units to estimate the landlord's decision to file for eviction and finds, like this paper, that landlords frequently tolerate missed payments. Moreover, it finds that few of the evicted tenants would have returned to paying rent, so policies that delay evictions or provide short-term assistance would not prevent most evictions. Other papers examine eviction or rent insurance within quantitative general equilibrium models, quantifying the effects of eviction policy for rents, tenant screening, and homelessness (Abramson, 2026; Abramson and Van Nieuwerburgh, 2026; Corbae et al., 2026). Coulson et al. (2025) constructs an index of tenants' rights and examines the impact

on eviction rates, rent, and homelessness. Together, these papers provide evidence of the costs of tenant protections that must be weighed against the liquidity benefits of missed payments emphasized here.

Second, viewing rent arrears as informal credit, this paper adds to research on borrowing during unemployment. Some papers report little to no unsecured borrowing on average (Hundtofte et al., 2019; Bethune, 2015; Keys et al., 2018; Olafsson and Pagel, 2018; Andersen et al., 2023; Ganong and Noel, 2019). Braxton et al. (2024) explains zero average borrowing by showing that some households default and delever, while other households borrow substantial amounts (replacing 5% of the income loss). Sullivan (2008) finds no unsecured borrowing among the lowest asset households with some borrowing among those with slightly higher assets. Hurst and Stafford (2004) and Sodini et al. (2023) show that homeowners are able to borrow against housing collateral when facing unemployment. Most related to this paper, Herkenhoff and Ohanian (2019) models missed mortgage payments as an implicit line of credit opened by the unusually long foreclosure delays of the Great Recession, and Gelman et al. (2020) shows that federal workers postponed mortgage and credit card payments during the 2013 government shutdown, a fully anticipated two-week shock. Both show owners using missed housing payments as a source of liquidity. This paper documents the same channel for renters, who miss payments more frequently and who have less access to formal credit.

Third, this paper fills a gap in the literature on responses to job loss by examining housing payments. Motivated by the Baily-Chetty formula (Baily, 1978; Chetty, 2006), much of this research focuses on nondurable expenditure (Gruber, 1997; East and Kuka, 2015; Hendren, 2017; Ganong and Noel, 2019) or responses in durable expenditure or income from the safety net, added-worker effects, and severance pay (Browning and Crossley, 2009; Hurd and Rohwedder, 2016; Andersen et al., 2023; East and Simon, 2024). Housing payments are generally excluded from these expenditure measures, either because rent is not observed in bank account data or to keep renters and owners comparable (Browning and Crossley, 2009; East and Kuka, 2015; Ganong and Noel, 2019; Andersen et al., 2023). Others show that households often fall behind on formal debt or non-housing bill payments (Hurd and Rohwedder, 2013; Braxton et al., 2024). A larger mortgage literature examines the role of job loss and other life events in driving mortgage default (Gerardi et al., 2018; Gyourko and Tracy, 2014; Bricker and Bucks, 2016; Ganong and Noel, 2022; Low, 2022, 2023).[5] While I focus on how housing payments help households cope with unemployment, other research examines the reverse: how unemployment insurance and the safety net help households make

[5]See Foote and Willen (2018) for a recent review.

housing payments (Hsu et al., 2018; Hobbs, 2020; McKernan et al., 2021).

## 2. Data and Motivating Evidence

### 2.1. Survey of Income and Program Participation

The first data source is the 1991–2008 panels of the Survey of Income and Program Participation (SIPP). Each panel surveys up to 43,500 households for 3–6 years and contains demographic information, monthly employment information, and annual questions about assets and debts. In each panel, the SIPP administers an Adult Well-Being topical module that asks questions about missed housing payments and eviction that occurred over the prior year. Specifically, it asks whether there was any time in the last twelve months when the household did not pay the full amount of the rent or mortgage and whether the household was evicted for nonpayment. The analysis focuses on this twelve-month window, henceforth the "payment-assessment period." Following a similar analysis for owners in Hsu et al. (2018), I convert the panel data into a repeated cross-section with one observation per household.

The main strategy compares households that did and did not experience a job loss during the payment-assessment period.[6] To isolate clean job loss transitions, I restrict the sample to households with positive household earnings and without an unemployed member during the pre-period, i.e., the four months immediately preceding the payment-assessment period.[7] Within the payment-assessment period, I keep households that either experience a job loss or have no unemployed member, so the comparison group consists of households that avoid unemployment altogether. To focus on standard housing arrangements, I further restrict the sample to households that rent or own with a mortgage during the pre-period, report positive housing and utility costs, and do not report public housing or government rent assistance. To avoid confounding job loss with retirement, I follow Sullivan (2008) and restrict the sample to households where the head (i.e., the owner or renter of record) is between the ages of 20 and 63.[8]

[6] A job loss is defined as an instance where a household member transitions from being with a job (SIPP Employment Status Recode is 1–5) to "No job all month, on layoff or looking for work all weeks." Household unemployment is defined as any household member reporting "No job all month, on layoff or looking for work all weeks" for any month.

[7] While this restriction defines the treatment cleanly, households already having unemployed members during the pre-period may be more affected by an additional job loss. The estimates are similar when these households are included and a pre-period unemployment indicator is added as a control (Online Appendix Table A.1).

[8] The 1992 SIPP panel is excluded from the main sample because the panel begins in the payment-assessment period, so I cannot observe the pre-period. I further restrict the sample to households that remained in the sample through the waves covering financial distress and wealth. I exclude households with missing variables used in the analysis, as well as the households in the 1991–1993 SIPP where the respondent's

### 2.2. American Life Panel

The second data source is the RAND American Life Panel (ALP), an Internet panel survey run by RAND Labor and Population with around 6,000 respondents (4,500 households). Its sample is representative of the U.S. adult population.[9] This paper uses the Financial Crisis Surveys, a survey of around 2,000 respondents per wave beginning in November 2008 and lasting into 2016. The survey was monthly until mid-2013 and quarterly thereafter. To make the timing uniform, the main specifications convert the monthly expenditure data to quarterly by taking the average of the reported monthly expenditure in each quarter and dropping missing values.[10] Hurd and Rohwedder (2013) and Hurd and Rohwedder (2016) provide a detailed overview of the Financial Crisis Surveys and the collection and accuracy of the expenditure data.

The survey has detailed information on monthly expenditures, including housing payments. Each wave collects information about the household's expenditure in the previous month across 25 spending categories, taking measures to improve accuracy and recall (Hurd and Rohwedder, 2016). These high-frequency spending categories account for around 70% of total spending (Hurd and Rohwedder, 2016). I focus on housing payments. I also form aggregated bill payments (housing, utility, and auto payments), which reflect committed consumption, and nondurable expenditures (food, housekeeping, recreation, transportation, personal services, and other child or pet expenditures). The survey also asks whether the household is behind on payments by two or more months.

The primary analysis uses quarterly panel observations of households and compares outcomes for those that do and do not experience job loss in quarter $t$. To isolate a clean job-loss treatment, I restrict the sample to households in which the head or spouse was employed and neither was unemployed during the pre-period (quarters $t-3$ through $t-1$), with outcomes measured over the post-period (quarters $t$ and $t+1$).[11] I further restrict the sample to households that, during the pre-period, either rented or owned (with a mortgage) and did not move.[12] I also require positive total income, housing expenditure, and nondurable

state of residence is not observed because the SIPP grouped some less populated states together.

[9]To remain representative, ALP participants without Internet access were provided with an Internet subscription and access. Respondents complete questionnaires several times each month, with response rates of 80 to 95%. See Pollard and Baird (2017) for an overview of the survey.

[10]In robustness checks, I find similar results using only the portion of the survey for which monthly data are available. I also use the monthly portion of the survey when examining the expenditure paths immediately around instances of job loss.

[11]As in the SIPP, the estimates are similar when households with a member already unemployed in the pre-period are included and an indicator for it is added as a control (Online Appendix Table A.1).

[12]If a household was not interviewed in all quarters, the variables are formed from the quarters in which the household is observed.

expenditure during the pre-period. The resulting sample spans mid-2009 through early 2016, with job losses observed from the first quarter of 2010, the first quarter with a pre-period income measure.

### 2.3. Summary Statistics and Motivating Evidence

Table 1 reports summary statistics for households that did and did not experience a job loss, in the SIPP (Panel A) and the ALP (Panel B). Each panel reports post-period outcomes at the top and pre-period characteristics below, the latter measured before the job loss wherever possible.[13] Three observations stand out.

First, job losers enter unemployment with little liquidity and large, committed housing costs. The median job-losing household in the SIPP holds $1,400 in liquid assets (checking and savings accounts, interest-earning accounts, equities, and mutual funds), or enough to replace 0.3 months of pre-unemployment income. Housing, meanwhile, is a large and committed expense: the average job loser spends 35% of pre-unemployment monthly income on housing and utilities, with a median of 22%. In the ALP, housing alone accounts for 28% on average and 21% at the median. These constraints are more severe for renters, who hold fewer liquid assets and devote a larger share of income to housing than owners (Online Appendix Table A.2). For households with little liquidity to draw on, the housing payment is the largest recurring bill they can stop paying.

Second, missing a housing payment is common among households facing job loss. In the SIPP, 15.0% of job losers miss a housing payment over the payment-assessment period, against 5.2% of households that keep their jobs (Figure 1a). The gap holds for renters and owners, and missed payments are more common among renting job losers (20%) than among owning job losers (12%). In the ALP, which records the stricter status of being two or more months behind, 9.5% of job losers fall behind against 2.0% of other households.[14] Households also report missed payments as a common response to job loss. Job-losing renters report falling behind on housing about as often as they report borrowing and reducing savings (Figure 1b): 28% report falling behind, against 31% who report borrowing and 30% who report reducing savings. Among owners, 15% report falling behind. These missed payments are not confined to specific periods or types of job losses. Across the six SIPP assessment windows spanning 1992 to 2010, the miss rate among job losers never falls below 11.9%

[13]The SIPP's demographic characteristics are always measured during the pre-period. The asset and debt variables come from the SIPP's Assets and Liabilities topical module, whose timing relative to the job loss varies by panel: the 1996 and 2001 wealth interviews fully precede the payment-assessment period, the 1993, 2004, and 2008 interviews fall early within it (the median job loser's assets are still measured before the loss), and the 1991 interview follows it.

[14]Online Appendix Table A.3 reports both samples by tenure, including the ALP shares the figure omits.

(Online Appendix Figure A.1). Across reasons for the separation, the miss rate is 14.1% after a layoff, the most common reason, 21.9% after a discharge, and 11.7 to 15.0% across the different quit categories (Online Appendix Table A.4).

Third, eviction is uncommon. Only 0.6% of SIPP job losers report an eviction, and 2.9% of ALP job losers receive an eviction or foreclosure notice, the first step in a process that need not lead to an eviction order or enforcement (Section 3.3). Among the job losers who miss a payment, 7% of renters and 2% of owners report an eviction.

These shares are descriptive, and they leave several questions unanswered. They do not identify the causal effect of job loss on missed payments. They do not measure how much liquidity a missed payment provides, which depends on how much housing expenditure falls and for how long. They may understate the negative consequences, since evictions may be underreported or informal. Nor do they say whether the arrears are repaid, or whether it is the households with the least liquidity who miss. The remainder of the paper addresses each of these questions.

## 3. Empirical Strategy and Results

This section investigates the use and consequences of missed housing payments that occur in response to job loss. First, using the SIPP, I estimate the causal effect of job loss on the tendency to miss any housing payments (the extensive margin). Second, using the ALP, I examine the size and dynamics of the reductions in housing expenditure around job loss (the intensive margin). Third, I examine the consequences of missed payments: evictions, moves, and informal evictions. Finally, I examine the magnitude of the rent arrears, whether the arrears are repaid, and whether these households have other sources of liquidity. Together, these results establish that missed payments are a common, quantitatively meaningful response to job loss that mostly does not lead to eviction or forced moves.

### 3.1. Extensive Margin: Frequency of Missed Housing Payments after Job Loss

*Empirical Strategy.* Using the SIPP sample of households with no unemployment in the prior four months, I estimate the following specification for household $i$ in state $s$ in year $t$

$$\texttt{missed}_{ist} = \alpha + \beta \texttt{job loss}_{ist} + \boldsymbol{X}_{ist}\gamma + \boldsymbol{Z}_{st}\xi + \delta_s + \tau_t + u_{ist}. \tag{1}$$

The dependent variable, `missed`, is an indicator for whether the household reports missing a housing payment during the payment-assessment period. The independent variable of interest is `job loss`, an indicator for whether someone in the household lost a job during that same period. The variables $\boldsymbol{X}$ include household-level demographic controls: the household

head's age, marital status, indicators for the head's race as Black and other nonwhite, an indicator for Hispanic ethnicity, indicators for the head's education group (5 categories), pre-period household income and household size, and changes in household size or marital status from the pre-period. The vector also includes household financial variables: the household's liquid assets, total net worth, unsecured debt, and housing payments as a share of monthly baseline household income. State economic controls $\boldsymbol{Z}$ include the unemployment rate, maximum unemployment benefits, log of real GDP per capita, and average wages, all from Hsu et al. (2018).[15] I also include state and year fixed effects, to control for geographic or time-varying differences in the prevalence of missed payments, such as states' renter protection laws or national economic conditions.

The coefficient $\beta$ represents the causal effect of job loss on missed housing payments. The identification concern is that job loss could be correlated with the error term, $u$. Financially fragile households may be more likely to miss housing payments and to lose their job, or households planning to move may both quit their job and skip housing payments. In this case, the estimator for $\beta$ would be biased.

To better control for observables, I also use inverse probability weighting (IPW) to reweight the households without a job loss to match the covariate distribution of job losers. I estimate each household's probability of job loss with a logit, then construct the (Hájek) IPW estimate of the effect of job loss on the households that lose a job (the ATT). Following Freedman et al. (2023), I also estimate a regression-adjusted IPW estimator that fits the regression of equation (1) separately among job losers and among non-losers (excluding the job loss indicator), weighting each regression by the IPW weights, and averages the implied effect of job loss across job-losing households.[16] This estimator is doubly robust, remaining consistent if either the propensity model or the outcome regression is correctly specified, though both models require selection on observables alone.

To address selection on unobservables, I include specifications that restrict the sample to involuntary job losses, which are less likely to be correlated with other household factors that could cause missed payments.[17] Supporting the exogeneity of involuntary job losses,

[15]The two change variables (in household size and marital status) are measured over the twelve-month outcome window and are therefore potentially post-treatment, as are the financial variables, which are measured after job loss for part of the sample. Online Appendix Table A.5 drops the change variables and further restricts job losers to those whose wealth was measured before the loss. The missed-payment estimates are essentially unchanged.

[16]The state indicators enter the propensity score but not the outcome regressions. Because the outcome model is fit separately by job-loss status, a state contributing a single job loser has its own parameter fit to that one household, and the correction in the heteroskedasticity-robust variance divides by zero. The weights already balance state (Online Appendix Table A.6).

[17]I use two definitions of involuntary job losses. Following Sullivan (2008), "Involuntary 1" consists of job

monthly household income is stable in the months before an involuntary separation and drops sharply at the loss, consistent with this restriction isolating a plausibly exogenous shock (Online Appendix Figure A.2).

*Results.* Job loss increases the probability of missing housing payments. Table 2 reports estimates for all respondents (Panel A), renters (Panel B), and owners with mortgages (Panel C). Column (1) includes only year fixed effects as controls. In Panel A, job loss raises the probability of a missed payment by 9.6 percentage points (pp). The estimate falls to 7.8–7.9pp as I add demographic and financial controls (column 2) and then state fixed effects and state economic controls (column 3). The attenuation is caused mostly by demographic controls (Online Appendix Table A.7).

The effect of job loss is larger for renters than for owners. Panels B and C, column (3), show that the effect is 9.3pp for renters and 6.4pp for owners, and the p-value of the difference is 0.02. The gap partly reflects the lower liquid wealth of renters: 45% of renter job losers fall in the lowest quintile, against 17% of owners. In Figure 2, I interact the job-loss indicator with indicators for the quintile of the household's liquid wealth. For both groups, missed payments are more common among those with lower liquid wealth, and within a given quintile renters and owners miss at similar rates. Only in the fourth quintile is the owner-renter gap significant ($p = 0.05$), with the other four between $p = 0.16$ and 0.68.[18]

The effects of job loss on missed payments are robust across several alternative specifications. Columns (4) and (5) report the IPW estimates.[19] Columns (6) and (7) turn to selection on unobservables, restricting the sample to the two definitions of involuntary job loss. The estimates range from 7.6 to 9.7pp and bracket the column (3) value. In further checks, I find similar results when using other measures of involuntary job loss, when restricting the sample to households with stable prior employment (no unemployment in the preceding year), when controlling for the number of months household members spent unemployed in the prior year (Online Appendix Table A.8), and when applying the method of Oster (2019) to investigate assumptions about the importance of unobservables (Online Appendix Table A.9).[20]

losses due to layoff, illness or injury to the worker, being discharged or fired, employer bankruptcy, or the sale of the business. Following the definition in Gerardi et al. (2018), "Involuntary 2" is more restrictive and consists only of job losses due to layoffs, employer bankruptcies, or the sale of the business. The SIPP records no reason for a sizable share of job losses, and I classify these as not involuntary under both definitions (Online Appendix Table A.4).

[18] A joint test does reject that all five gaps are zero ($p = 0.03$).

[19] Online Appendix Table A.6 reports the covariate balance after IPW reweighting.

[20] At the recommended values of Oster (2019), the bias-adjusted estimates imply that job loss increases the probability of missed housing payments by 7.1pp overall, 8.3pp for renters, and 5.9pp for owners.

### 3.2. Intensive Margin: Percent Changes in Housing Payments after Job Loss

*Empirical Strategy.* Using the ALP, I examine changes in housing expenditure around instances of job loss, following a standard methodology from research on changes in nondurable (food) expenditure around job loss (Gruber, 1997; East and Kuka, 2015; Hendren, 2017). The primary dependent variable is $\Delta y_{it}$, which is the percentage change in household $i$'s housing expenditure

$$\Delta y_{it} = \frac{\overline{y}_{it}^{\text{post}} - \overline{y}_{it}^{\text{pre}}}{\overline{y}_{it}^{\text{pre}}}.$$

The post-period is average monthly expenditure in quarters $t$ and $t+1$, while the pre-period is average expenditure in quarters $t-3$ through $t-1$. I similarly compute percentage changes in income, bill payments (housing, utility, and auto payments), and nondurable expenditure. To reduce the influence of extreme outliers, I winsorize the percentage change at $\pm 100\%$. In additional specifications, I find the estimates are also robust to using log changes or dollar changes in expenditure.[21]

The identification strategy examines changes in expenditure among households that experience job loss compared to households that remain employed. The sample is restricted to households $i$ in quarter $t$ that, during the pre-period, were renters or owners with a mortgage, where the head or spouse was employed, where neither was unemployed, and where the household did not change residence. I estimate the following specification using ordinary least squares (OLS):

$$\Delta y_{i,t} = \beta \texttt{job loss}_{i,t} + \tau_t + \varepsilon_{i,t} \tag{2}$$

where $\texttt{job loss}_{i,t}$ is an indicator that equals one if the head or spouse in household $i$ lost a job in quarter $t$, and $\tau_t$ is a set of quarter fixed effects. The coefficient $\beta$ captures the average percentage change in housing expenditure for households that experience job loss in quarter $t$ relative to the change in expenditures for households that do not.

I also examine the dynamic path of spending around job loss, for two reasons. First, examining the pre-treatment path helps assess the parallel trends assumption by showing changes before job loss. Second, the path of spending after job loss reveals information about repayment. If debt is being repaid on average, average payments in the post-period should eventually rise above the pre-period baseline. To provide a more granular picture, I use the portion of the ALP survey for which monthly expenditure data are available (May 2009–April

[21] I use exact percentage changes instead of log changes because, unlike food expenditure, housing expenditure sometimes falls to \$0. The alternatives are restricting the sample to respondents observed for the full pre- and post-period, the percentage change in the difference in $\log(y+1)$, and the change in dollar expenditure (Online Appendix Table A.10).

2013) when examining payment dynamics.[22] I use the local projections method (Jordà, 2005) applied in a difference-in-difference (LP-DiD) setting as in Dube et al. (2025), which combines local projections with a "clean" control group and avoids the negative weights associated with two-way fixed effects regressions. Because not all ALP respondents answer every month, it also retains more of the sample than a distributed lag event study. I implement this method by estimating the following set of regression equations

$$\frac{y_{i,t+h} - y_{it}^{\text{pre}}}{y_{it}^{\text{pre}}} = \beta_h \texttt{job loss}_{i,t} + \tau_t + \varepsilon_{i,t} \qquad \text{for } h = -8, \ldots, 8 \tag{3}$$

where the dependent variable is the percent change in housing expenditure in month $t + h$ relative to the pre-period expenditure. The sample used to estimate equation (3) consists of (i) households whose first job loss occurs in period $t$ and (ii) the "clean" control group consisting of households that have not reported any job loss or unemployment as of period $t + h$. Given parallel trends and no anticipation, the estimator $\hat{\beta}_h$ recovers the variance-weighted average treatment effect on the treated $h$ periods after job loss (with $h < 0$ showing pre-treatment trends).

*Results.* Table 3 shows the effect of job loss on income, housing payments, bills, and nondurable expenditure. As a benchmark, column (1) shows that household income declines by 26% upon job loss, with slightly larger (smaller) declines for renters (owners). Next, for comparison with the SIPP estimates, I estimate the effect of job loss on the ALP indicator for whether the household is two or more months behind on rent or mortgage payments in either quarter $t$ or $t+1$. Column (2) shows that job loss is associated with a 7.5pp increase in the probability of a missed payment, with slightly higher point estimates for renters, similar to the estimates from the SIPP.[23]

The main results in column (3) show that housing expenditure is fairly flexible. Upon job loss, housing expenditures fall by 4.8% relative to the pre-period expenditure, with declines of 7.5% and 3.6% for renters and owners, respectively. The renter and owner point estimates differ, but with the ALP's smaller sample the difference is not statistically significant (a gap of 3.9 percentage points, $p = 0.20$; Online Appendix Table A.11). Column (4) broadens the expenditure outcome to bills (the sum of housing, utility, and auto payments), which

[22] When using the monthly data, the pre-period consists of months $t = -6$ to $t - 1$ and I impose the same sample restrictions as in the quarterly analysis. Column (4) of Online Appendix Table A.10 reports the housing and nondurable estimates of Table 3 on this monthly sample.

[23] The magnitudes are slightly smaller than the no-controls estimates from the SIPP (Table 2 column 1), which could reflect the differences in the questions (any missed payments vs. 2+ months of missed payments) and timing (covering a 12-month or a 6-month period).

represent a wider set of consumption commitments. These percentage declines represent economically meaningful amounts, as Table 1 shows that housing payments (bill payments) take up 28% (45%) of these households' pre-unemployment monthly income.

For renters, the declines in housing payments match the declines in nondurable expenditures. Column (5) shows that nondurable expenditure falls by 8% upon job loss, with declines of 7.2% for renters and 8.3% for owners. These magnitudes are consistent with estimates in the literature, including the path of nondurable expenditure after job loss found in Ganong and Noel (2019), and the 7–10% decline in food expenditure found in Gruber (1997) and East and Kuka (2015). Thus, housing expenditure for renters is on average as flexible as nondurable expenditure. Within households, the two changes move together: among non-moving job losers, the correlation between the percentage change in housing payments and the percentage change in nondurable expenditure is 0.30 (Online Appendix Table A.12), indicating that the same households cut across multiple expenditure categories.

Next, I examine the dynamic path of expenditures around job loss in Figure 3.[24] There are two main takeaways. First, both series show relatively stable trends in the months leading to job loss, providing some support for the parallel trends assumption. Second, the post-job-loss path for housing payments in panel (a) reveals information about repayment patterns. Renters' payments continue to fall in months 0–3 to a minimum of around -15% then gradually recover in months 4–6, while owners' payments fall less and return to pre-period levels quickly. Renters' payments recover toward the pre-period level but do not rise above it, suggesting that, on average, the rent arrears are not repaid over this window. Section 3.4 further investigates repayment patterns.

*Accounting for Movers.* The declines in housing expenditure are not driven by households that move into cheaper places. Although (most) moves are observable in the ALP, I do not observe the counterfactual amount these households would have paid if they had not moved, which is the object of interest for examining the flexibility of housing expenditure. I cannot simply drop these households, as selection into moving may be endogenous if, for example, households move because their landlord does not allow late payments. Such a correlation would lead to biased estimates of the changes in housing payments if I simply restrict the sample to nonmovers. To investigate these concerns, in Online Appendix B I construct upper bounds on what the average household would have paid if no households had moved. To do so, I make the conservative assumption that, if households had not moved, their average

[24]Online Appendix Figure A.3 plots the same specification for household income and for bill payments. Online Appendix Figure A.4 re-estimates Figure 3 dropping each household, treated or control, from the month it moves onward.

housing expenditure would not have *increased* because they lost their job. This allows for the possibility that landlords of movers may have been less flexible on rent and required full payment. The bounds imply housing expenditure would still have fallen by at least 4.1% if no households moved, 5.5% for renters (Online Appendix Table B.1).[25]

*Quantile Regression.* Only a fraction of households miss payments, and the average expenditure declines are likely driven by large reductions, often complete nonpayment, among a subset of households. To investigate, I estimate quantile regressions following equation (2) using the same dependent variable: the change in average housing expenditure during the two quarters after job loss. Table 4 reports estimates of these quantile treatment effects for expenditure on housing and nondurable goods, for all respondents and for renters and owners separately. As expected, the declines in housing expenditure are concentrated in the low end of the distribution. The 0.1 quantile of the change in housing expenditure falls by 16.4% for all respondents, 31.5% for renters, and 10.4% for owners. Most households, though, continue paying in full, as the effects on the 0.4 through 0.95 quantiles of housing expenditure are minimal. In contrast, reductions in nondurable expenditure are spread more evenly across the distribution (columns 2, 4, 6). As one measure of this comparison, the 0.05 quantile of housing payments falls by 25 times as much as the 0.75 quantile, but for nondurable expenditure the 0.05 quantile falls by only twice as much as the 0.75 quantile.

For the households that reduce housing expenditure, the reduction often comes from months in which they pay nothing. Online Appendix Figure A.5 plots the distribution of changes in monthly housing payments in the six months after job loss, each measured against the household's pre-period baseline. The distribution is bimodal: renters who lose a job pay 90% or more of their usual amount in 75.8% of months and pay nothing in 8.5%. Thus, while most households do not adjust housing expenditure, those that do obtain substantial liquidity, often equaling one or more months of rent. Section 3.4 further examines the amount of liquidity provided.

### 3.3. Consequences of Missed Housing Payments

Missed payments provide a source of liquidity, freeing resources (relative to full payment) for households facing job loss. Using that liquidity, however, may put the housing itself at risk if it leads to evictions or forced moves. This section measures how often that risk is realized. I examine formal evictions, then moves or informal evictions. The large majority

[25]Some households are missing data on whether they move, and the upper bounds treat move status as missing at random. I also construct a more conservative upper bound, treating all missing observations as movers, and the estimated upper bounds are 3.3% for the overall sample and 4.1% for renters.

of missed payments do not end in formal evictions, and households missing payments do not move more frequently than those who do not.

*Formal Evictions.* To examine whether job loss results in eviction, I estimate the following equation:

$$\texttt{eviction}_{ist} = \alpha + \beta \texttt{job loss}_{ist} + \boldsymbol{X}_{ist}\gamma + \boldsymbol{Z}_{st}\xi + \delta_s + \tau_t + u_{ist}.$$

The right-hand side matches equation (1), but the dependent variable is now an indicator for whether household $i$ in state $s$ has been evicted for nonpayment during year $t$. The indicator `job loss` and controls are identical to those in equation (1), and the coefficient $\beta$ captures the difference in the probability of eviction for households that lose jobs relative to those that do not. As in Table 2, I also use the reweighting estimators and the subsamples of involuntary job losses to investigate concerns about selection on observables and unobservables.

Table 5 reports the estimates. Overall, job loss increases the probability of eviction during the year by 0.4pp. Panels B and C reveal that these evictions are of renters, not owners. For renters, evictions rise by 0.9–1pp (columns 1–3) while, for owners, the effect is near zero. The tenure difference is statistically significant ($p = 0.009$). The estimates are similar when using IPW in columns (4) and (5). Columns (6) and (7) restrict the sample to involuntary job losses. The measures differ in whether illness or injury and being discharged or fired count as involuntary: column (6) (Invol. 1) includes them, column (7) (Invol. 2) does not (Section 3.1). These categories have higher rates of both missed payments and evictions (Online Appendix Table A.4), producing the larger column (6) estimates.[26]

Compared to the rates of missed payments, evictions are much less common. Job loss increases missed payments by 7.8pp (Table 2 column 3) but evictions increase by only 0.4pp. Taking the ratio indicates that 5% of all missed payments lead to evictions. For renters, job loss increases missed payments by 9.3pp while evictions rise by 0.9pp, indicating that 9.4% of missed payments end in evictions. I obtain slightly lower estimates from an alternative strategy. Restricting the sample to job losers, I regress evictions on the indicator for missed payments and the full set of controls. With that strategy, 4.3% of missed payments lead to evictions, rising to 6.7% for renters (Online Appendix Table A.13).

These low rates of eviction may partly reflect selection into who misses rent. If renters with harsh landlords avoid missing, eviction rates among those who choose to miss a payment would understate the risk of eviction for the average tenant. To investigate, I attempt to reduce selection by restricting the sample to renters with fewer alternatives to missing

[26]Online Appendix Tables A.8 and A.9 Panel B show similar or slightly smaller estimates when using other measures of involuntary job loss and the bias-adjustment method of Oster (2019).

payments: those with less than one month of liquid assets, zero liquid assets, high rent burden, longer unemployment spells, or larger income declines (Online Appendix Table A.14). These groups do miss payments more often (Panel A), but their eviction rates conditional on missing are no higher (Panel B). Every subgroup's eviction rate conditional on missing lies between 5.6 and 9.2%, and none are statistically different from the eviction rates of renters not in the subgroup. The renters least able to avoid missing face a similar eviction risk to the rest, suggesting selection into missed payments by eviction risk is limited.

The American Housing Survey (AHS), a nationally representative survey of housing units, provides more evidence that most missed payments do not lead to evictions (U.S. Census Bureau, 2018). Among the 21,887 renter households surveyed in the 2017 module on rent-payment distress and eviction, 6.8% were unable to pay rent in at least one of the prior three months. Conditional on missing, 16.8% were threatened with eviction and 3.8% received an eviction notice from a court, which is a preliminary step that could, but often does not, lead to eviction.[27] The survey also asks about renters' expectations of eviction in the next two months: conditional on missing a payment, 4.4% thought an eviction very likely and 13.0% thought it somewhat likely.

*Moves and Informal Evictions.* Even if not formally evicted, households that miss payments may be pressured to move in an informal eviction.[28] The SIPP is well suited to track moves among households. As a person-based survey, it follows original sample members through changes of address and household composition.[29] I examine differences in the frequency and types of moves made by those that do and do not miss payments.

Renters move often even without missing, so a move after a missed payment is often not an informal eviction. The question is whether missing payments increases the likelihood of moving. Figure 4 shows the unconditional move rates for job-losing households. Renters (panel a) move frequently. About 30% move within twelve months of the job loss and 40–45%

[27]Eviction filings are often made only to encourage payment, and serial or repeat filings for the same tenant by the same landlord are common (Garboden and Rosen, 2019). Almost half of eviction filings in Chicago are serial (Leung et al., 2021). Many filings never reach an executed eviction in which the tenant is removed: 10.9% of eviction filings in New York end in execution, and around 16% in Chicago (Leung et al., 2021; Collinson et al., 2024). Eviction orders do not necessarily cause moves. Collinson et al. (2024) finds that an order increases residence changes in the year after filing by 8.2pp from a baseline move rate of 29.2% among the non-evicted tenants in housing court.

[28]Balzarini and Boyd (2021) reports that landlords who have exhausted other accommodations ask delinquent tenants to leave without repaying and without a filing, or pay them to leave, a practice landlords call "cash for keys".

[29]The SIPP uses several techniques to track original sample members who move: contact information collected at the first interview, and follow-up with neighbors, employers, or administrative resources. It continues to follow them unless they are institutionalized, living in military barracks, or move abroad. See SIPP User Guide, Chapter 2.

within 24 months. But those who missed a payment move out at similar rates to those who did not. Owners (panel b), in contrast, move less often, but those who missed a payment move out at higher rates.[30]

After controlling for observable characteristics, there is little relationship between missed payments and the probability of moving among renters. I restrict the sample to job-losing households and drop those that moved in the four months before job loss or are not observed for at least twelve months after.[31] I estimate regressions of the form

$$\texttt{move}_{ist} = \alpha + \beta \texttt{missed}_{ist} + \boldsymbol{X}_{ist}\gamma + \boldsymbol{Z}_{st}\xi + \delta_s + \tau_t + u_{ist}, \tag{4}$$

where the dependent variable indicates whether the household moves within the twelve months following the start of the unemployment spell and the controls match equation (1). In the sample of all respondents (Table 6 Panel A), those missing payments are 6.3pp more likely to move, falling to 3.5pp as I add controls. Using IPW or restricting to involuntary job losses further shrinks differences between those that did and did not miss payments. Panels B and C show that these differential moves among missers are significant only for owners. For renters there is no statistically significant difference in move rates, and the estimates across columns range from being -5.1pp (less likely to move) to 2.8pp (more likely) compared to the sample mean move rate of 30%.[32]

Although renters with missed payments are not more likely to move, the moves they make are more likely to be downgrades. In the SIPP, movers who missed payments generally land in worse destinations than movers who paid (Online Appendix Table A.17). They report more housing and neighborhood problems, and their moves more often end with the mover doubling up in another household (measured as zero housing payment or no longer being the household head).

Self-reported move reasons in the ALP provide another way to gauge whether moves reflect informal eviction. The ALP asks movers to select, from a list, what prompted each

[30]The move rates are robust to sample attrition: Online Appendix Figure A.7 shows that, two years after job loss, 40% of renters have neither moved nor attritted.

[31]Online Appendix Table A.15 shows the estimates when I include households that moved prior to job loss. When these households are included, renters who miss payments have slightly *lower* move rates than those who do not.

[32]I obtain similar results when using the full sample of households with and without job losses to examine the effects of both job loss and missed payments on moves (Online Appendix Table A.16). For renters, job loss raises the probability of moving within twelve months by 4.3pp ($p = 0.003$). A missed payment on its own, however, has no association with moving (-0.9pp, $p = 0.590$), and the interaction of missed payments with job loss is also statistically insignificant (2.5pp, $p = 0.502$). The method of Oster (2019) yields similar estimates when adjusting for bias from unobservable selection (Online Appendix Table A.9 Panel C).

move. Among renters who fall at least two months behind on housing, 43% move within two years and 6.4% (6 of 94) report an eviction as the reason (Online Appendix Table A.18 Panel B), roughly matching the eviction rate estimated in the SIPP. An additional 14% of behind renters cited an affordability reason for a move (could no longer afford rent or wanted lower rent). Combined, the 20% of behind renters in the ALP list an eviction or affordability-related reason for a move, which provides an upper bound on the share forced to move for nonpayment.[33]

External evidence corroborates these relatively low rates of formal and informal evictions. Decker (2021) surveys the owners of one- to four-unit rental properties on how they expect rent delinquencies to resolve. Landlords rarely expect eviction (formal or informal) for arrears of 3 months or less, and the most common expected outcomes are repayment (arrears of one month) or rent forgiveness (arrears of 2 to 3 months). Only after arrears exceed 4 months does the share of formal and informal evictions exceed 25% of the anticipated resolutions.[34]

### 3.4. Arrears as Liquidity: Size, Repayment, and Access to Credit

The prior sections show that job loss causes some households to miss housing payments and that these missed payments typically do not lead to evictions or forced moves. Instead, by reducing housing expenditure while maintaining housing consumption, missed payments provide liquidity to households facing job loss. The arrears are legally owed to the landlord, so deferring the rent is a form of debt but it is not clear how often that debt is repaid. This section examines the amount of liquidity provided by rent arrears, whether those arrears are repaid, and how that liquidity compares to the alternatives available to these renters.

*Liquidity and Repayment.* I first use the monthly expenditure data from the ALP (May 2009–April 2013), during which I observe month-by-month housing payments. Online Appendix Table A.19 follows households from the first month they miss and records what they pay over the next year. Missing often recurs and repayment is rare. Among the 14 renter job losers who pay nothing in the job-loss month or one of the following eight, 62% miss rent again within the year, while only 23% make an observable catch-up payment (exceeding baseline rent by 10%). The qualitative pattern is the same when using alternative thresholds for a missed payment, namely paying less than 50% or less than 75% of rent. The ALP's small

[33]This is an upper bound because moves to cheaper residences for affordability-related reasons are often voluntary, the optimal adjustment to a negative income shock in the consumption-commitments model discussed above.

[34]The survey was fielded in 2021, under the pandemic eviction moratoria. Accommodations of this kind are not specific to that period. Interviews with small-scale landlords conducted between 2017 and 2019 describe payment plans, waived late fees, and forgiveness of arrears (Balzarini and Boyd, 2021; Decker, 2023).

samples, switch to quarterly surveys, and lack of a direct measure of arrears and repayment, however, limit its value in examining the depth of arrears and repayment patterns.

The Federal Reserve's Survey of Household Economics and Decisionmaking (SHED) offers a better measure of arrears and repayment in its annual, nationally representative survey of 11,000–13,000 individuals. Each year the SHED asks renters whether they were behind on rent at any point in the past year and, in the 2021 and 2022 waves (during the pandemic), whether they are still in arrears and how much they owe (Online Appendix Table A.20). Among renters behind in the past year, roughly half still owed at the interview (45% overall, 51% among those with a job loss).[35] Among job-losing renters with arrears, the mean balance outstanding is $2,300, or 2.7 months of the household's own rent. Because balances are measured net of any repayment already made, the mean may understate the amount drawn before repayment. The upper quartile, where less repayment has likely occurred, is 3.0 months of rent.

Other research finds similar evidence of persistent arrears and partial repayment. In Consumer Financial Protection Bureau (CFPB) rental-payment records from 2021–2024, Witzen (2025) finds that just over half of renters who incur a first late fee return to paying on time, while 42% incur another late fee the following month and 30% are still incurring them five months later. In 2015–2019 landlord ledgers from high-poverty, high-eviction neighborhoods, Humphries et al. (2024) finds that 38.7% of tenants who fall at least one month behind eventually clear the balance. Landlords also change their anticipated resolution by the depth of the arrears. The survey of landlords in Decker (2021) finds that they mostly expect repayment when a tenant misses a single month, but mostly expect to forgive the debt once arrears reach 2 to 3 months. Although somewhat fragmentary, the evidence suggests that arrears balances often reach roughly 2 to 3 months of rent, with roughly half of rent arrears resolved within a year.

*Liquid Assets and Formal Credit.* Renters who miss payments have limited access to other sources of liquidity. Among the SIPP renter job losers who missed a payment and whose liquid wealth was measured before the job loss, the median household held just $38 in liquid assets, and the mean was only $1,639. Missed payments are most common among the households with the least liquidity. The effect of job loss on missed payments is largest among those in the bottom two quintiles of liquidity (under $1,550 of liquid wealth, median $134) and falls as liquidity rises (Figure 2).

[35]The half who no longer owe may overestimate repayment: 36% of behind renters applied for emergency rental assistance in 2021 and 38% of applicants had received it, and a balance can also be resolved through forgiveness, settlement, write-off, or move-out.

Many renters missing payments also have limited access to and use of formal credit. In the ALP renter job-loss sample, 59% report no credit-card balance before the job loss, though this could reflect non-revolving use or not holding a card. Among renters who cut housing payments by 25% or more, the mean card balance falls by $173 from before to after the job loss and only 10% increase their balance.[36] The CFPB's Making Ends Meet survey provides a more complete view of household credit access (Online Appendix Table A.21). Among renters reporting difficulty making housing payments, half cannot cover any part of a $2,000 expense (against 10% of renters without difficulty), their average VantageScore is 590 (against 700), 45% hold no credit card (against 14%), 43% have a delinquent account (against 8%), and, conditional on applying, 71% are denied new credit (against 38%). For many renters, accumulating rent arrears may be the only available source of unsecured borrowing.

The use of arrears by unemployed renters is similar to or larger than existing estimates of formal unsecured borrowing by the broader population of job losers. The existing literature finds that unemployed households, on average, finance less than half a percent of consumption with new credit-card borrowing (Ganong and Noel, 2019). The households at the bottom of the wealth distribution do essentially no unsecured borrowing after an earnings shortfall (Sullivan, 2008). Arrears are a larger draw. Rent averages 30% of monthly income among renters in the ALP, so missing 2 to 3 months of rent supplies liquidity of roughly 60 to 90% of a month's income. Per dollar of lost income, the housing response of job-losing renters is comparable to the formal borrowing response Braxton et al. (2024) estimates for the displaced workers with the most unused credit.[37] Moreover, rent arrears supply this liquidity to otherwise liquidity-constrained households who have few alternative methods of replacing lost income.

## 4. A Model of Missed Payments as Landlord-Provided Liquidity

The empirical sections establish three facts: after job loss around 10% of renters fall behind on rent, the amounts involved are large and often not fully repaid, and few of these tenants are evicted or forced to move. Most missed payments are therefore accommodations. The tenant makes a partial or zero payment, the tenancy continues, and much of the arrears is

[36] This is a small cell, 30 events, so the share is indicative rather than precise.

[37] Braxton et al. (2024) estimates that displaced workers in the top quintile of unused credit borrow $458 per $10,000 of lost earnings over the two years around displacement (4.6 cents per dollar, including home-equity lines renters cannot use; about 2 cents per dollar on bank cards alone), while the constrained bottom quintiles reduce balances. Among job-losing renters, a regression of the dollar change in the housing payment on the dollar change in income implies that a dollar of lost income is replaced with a 4.7 cent reduction in housing payments over the six months after job loss (Online Appendix Table A.22), a response Table 4 shows is concentrated in the minority who reduce payments.

never collected. This section develops a stylized, two-period model of these accommodations and asks why it is the *landlord* who provides them. A tenant facing a shock could in principle borrow from a third-party lender or purchase insurance to pay rent. Instead, the informal credit comes bundled with the housing itself. Within the model, this bundling arises from three features of the landlord-tenant relationship. First, the landlord internalizes eviction costs and so is willing to offer accommodations that, as a standalone contract, would generate losses for the provider. Second, compared with third parties, the landlord has a stronger enforcement mechanism to induce (partial) repayment, the nonrenewal of a lease. Third, the landlord better observes the tenant's circumstances, and so can target accommodations to the appropriate tenants. Online Appendix C provides the full details and proofs of the model.

### 4.1. Setup and Payoffs

The model begins with a risk-averse tenant earning baseline income $y$ and holding a lease with a risk-neutral landlord at the contract rent $R$. Time consists of two periods, the current lease term (period 1) and a subsequent lease term (period 2), typically a year. At the start of period 1, the tenant suffers a temporary income shock $\varepsilon \geq 0$ that is observable to both parties, reflecting close communication between landlords and tenants receiving accommodations.[38] Later, I consider the case in which the shock is not observed by landlords. Empirically, $\varepsilon$ represents the income lost over the lease term. After observing the shock in period 1, the landlord and tenant settle on one of three period 1 outcomes: full payment ($F$), accommodation ($A$), or eviction ($E$).[39] If the tenant pays in full or enters an accommodation, in period 2 she has the ability to renew the lease or move at cost $m$ into a new unit at market rate $R$.[40]

Each outcome determines a pair of payoffs, landlord profit $\Pi$ and tenant utility $U$. The landlord's payoff is the present value of all payments, using the common discount factor

[38]Balzarini and Boyd (2021) interviews landlords about informal accommodations around rent delinquency and finds that "effective, consistent communication was a key factor in landlords' willingness to engage in a process to avoid evicting tenants."

[39]To focus on partial payments and eviction, I do not model the option to move into cheaper housing without an eviction. With rent fixed at $R$, a move in period 1 would leave the tenant's housing costs unchanged while requiring her to pay moving costs, so she would never choose one. However, one could reinterpret the eviction outcome as simply the outside option of the household, including moving into a cheaper residence or doubling up. The key requirements are that the outside option generates costs for both the tenant (e.g., moving costs, lower housing quality, lease-breaking fees) and the landlord (unexpected turnover).

[40]The constant rental rate is a simplification to abstract from modeling housing choice and utility. One justification is that unshocked tenants, including those in period 2, prefer housing consumption consistent with rent $R$.

$\beta$. The tenant has CRRA period $t$ utility $u(c_t) = c_t^{1-\rho}/(1-\rho)$ with $\rho > 0$ and maximizes $u(c_1) + \beta u(c_2)$. She cannot borrow but can save at a return of $\beta^{-1}$. Two further technical restrictions keep consumption strictly positive at every shock and every outcome: the shock distribution $G(\varepsilon)$, assumed continuous, has compact support $[0, \bar{\varepsilon}]$ with $\bar{\varepsilon} < y - R$ and the moving costs satisfy $m \in (0, y - R)$.

*Full payment.* The tenant pays the contracted rent in both periods, giving the following payoffs:

$$\Pi^F = (1+\beta)R \qquad U^F(\varepsilon) = u(y - \varepsilon - R) + \beta u(y - R). \tag{5}$$

The tenant, with no formal credit access, bears the entire shock in the low-income period. Although the tenant has the option to move in period 2, moving is costly, so she will not.

*Eviction.* If the tenant does not pay in full and the parties reach no accommodation agreement, the tenant is evicted. The eviction payoffs are the following:

$$\Pi^E = (1+\beta)R - k_L \qquad U^E(\varepsilon) = (1+\beta)u(a - b\varepsilon). \tag{6}$$

Eviction requires removing the tenant in the middle of the period 1 lease, and it is costly for the landlord due to legal fees, procedural delays during which no rent is collected, and turnover costs.[41] The landlord's total eviction cost is $k_L \in [0, R]$, where the upper bound implies eviction costs equal the total contracted rent over the full lease term, $R$. The landlord can re-let the unit in period 2, so the landlord's net payoff from eviction is the contracted rent over the two periods minus the losses, including lost rent, from eviction.[42]

For tenants, eviction begins a sequence of legal steps and housing changes, and modeling them would add unnecessary complexity. Eviction enters here only as the tenant's outside option, so what matters is an evicted tenant's payoff relative to full payment and accommodation. I therefore summarize the eviction path by a constant consumption equivalent, $a - b\varepsilon$ with $a > 0, b \geq 0$. An evicted tenant with no shock would accept constant consumption $a$ in place of eviction, and each dollar of shock lowers that consumption by $b$. The level $a$ is low because eviction brings housing instability, earnings losses, financial distress, and worse outcomes for children (Collinson et al., 2024, 2025). The slope may be small because eviction can also, temporarily, help smooth consumption by triggering housing assistance,

[41] Court fees alone run \$300 to \$800. Industry estimates put the all-in cost of evicting a tenant at about \$3,500 (SmartMove, 2022), and Samios (2023) reports estimates up to \$8,000. Structural estimates put a landlord's cost of an eviction filing at roughly two to three months of rent (Humphries et al., 2024).

[42] The bound $k_L \leq R$ reflects that the eviction costs are less than the full period 1 rent, ensuring that eviction weakly beats collecting nothing for period 1 and re-letting in period 2.

family help, or rent-free occupancy during the procedural delays.[43] Setting $b = 0$ nests an eviction payoff that does not move with the shock at all. I impose two requirements on $(a, b)$: eviction is worse than full payment for an unshocked tenant ($a < y - R$) and eviction is better than any feasible accommodation (described below) at the largest shock $\bar{\varepsilon}$. These restrictions ensure that full payment and eviction both occur within the support of $\varepsilon$. Online Appendix C.1.1 states both formally.

*Accommodation.* The third outcome, a partial payment accommodation, is the central focus. After observing the tenant's shock $\varepsilon$, the landlord may be willing to offer a partial payment accommodation to avoid a costly eviction. The accommodation consists of an offer $(r_1, r_2)$ where $r_1 \in [0, R]$ is the reduced rent payment the tenant must make in period 1 and $r_2 \geq 0$ is a catch-up payment due at the start of period 2 along with rent $R$. Under such an agreement, the tenant pays $r_1$ out of shocked income, potentially saves $\sigma \geq 0$ at return $\beta^{-1}$, and pays $R + r_2$ in period 2, so the payoffs are

$$\Pi^A(r_1, r_2) = r_1 + \beta(R + r_2) \qquad U^A(\varepsilon; r_1, r_2) = \max_{\sigma \geq 0} \; u(y - \varepsilon - r_1 - \sigma) + \beta u(y - R - r_2 + \sigma/\beta). \quad (7)$$

Accommodations must satisfy several constraints. The non-negativity constraints require $r_1, r_2 \geq 0$, and limits on the present value of payments $r_1 + \beta r_2 \leq R$ reflect legal caps on late fees or interest charges.[44] The accommodation agreement is informal, so the catch-up payment must be self-enforcing. The tenant's moving costs operate as the enforcement mechanism. If an accommodated tenant does not repay $r_2$, the landlord does not renew the lease in period 2, forcing the tenant to pay moving costs $m$ to rent a new unit at the same rate $R$.[45] To be self-enforcing, the catch-up payment must therefore be cheaper than moving, i.e., $r_2 \leq m$.[46]

[43] In several jurisdictions a filed eviction triggers rental assistance or court-supervised repayment (Illinois Courts, 2022; Texas Department of Housing and Community Affairs, 2021; Virginia General Assembly, 2020). Doubling up is a common post-eviction outcome: it was the most common destination among evicted Oregon tenants (Farrington et al., 2025) and financially vulnerable renters asked where they would go if they could no longer pay rent named family or friends most often (Board of Governors of the Federal Reserve System, 2021).

[44] The model could easily incorporate a cap that allows some interest or fees. Accommodated tenants repay less than the present value of the rent, however, so a higher cap would not bind.

[45] A 2019 industry guide from the National Association of Residential Property Managers convention lists a tenant's "Past Due Balance" first among the factors determining renewal eligibility (Propertyware, 2019).

[46] The landlord's payoff under nonrenewal is to lease to a new tenant and receive rent $R$. Relative to eviction, nonrenewal is an easier process that I assume is costless to the landlord. Just-cause eviction policies, implemented in a few states in recent years, are designed to limit landlords' ability to use nonrenewals to avoid the protections and costs of formal eviction (National Low Income Housing Coalition, 2021). On the landlord's side, the agreed terms are assumed binding: ex post, the landlord could threaten nonrenewal to extract up to $m$ regardless of the agreement, a holdup I abstract from, consistent with the repeated

The accommodation must also satisfy the parties' participation constraints by providing payoffs at least as large as their outside options. Consider a fixed shock $\varepsilon$. If $U^F(\varepsilon) \geq U^E(\varepsilon)$, then, absent an accommodation, the tenant would pay in full.[47] In this case, the landlord offers no accommodation as doing so would forfeit rent the tenant would have otherwise paid. If $U^E(\varepsilon) > U^F(\varepsilon)$, then, absent an accommodation, the tenant would be evicted. In this case, an accommodation $(r_1, r_2)$ would satisfy the participation constraints if it (weakly) generates surplus over eviction for both parties, i.e., $U^A(\varepsilon; r_1, r_2) \geq U^E(\varepsilon)$ and $\Pi^A(r_1, r_2) \geq \Pi^E$. The remainder of the section focuses on these cases where the shock satisfies the landlord's eligibility criteria, i.e., $\varepsilon$ is such that $U^E(\varepsilon) > U^F(\varepsilon)$.

For a given $\varepsilon$, there can be many accommodations that satisfy feasibility and participation constraints. To pin down a specific contract, I assume there exists an exogenous $\theta \in [0, 1]$ governing the bargaining power of the tenant. Specifically, it determines the share of the landlord's surplus that is transferred to the tenant so that the present value of accommodation payments is $r_1 + \beta r_2 = R - \theta k_L$. Fixing $\theta$ has three advantages over a standard, shock-specific bargaining solution.[48] First, varying $\theta$ in $[0, 1]$ provides a simple way to span the range of possible accommodations. When $\theta = 0$, the accommodation requires the tenant to eventually pay the full present value of the rent ($r_1 + \beta r_2 = R$) and the accommodation contract is a pure loan. When $\theta = 1$, the accommodation includes maximal rent forgiveness and holds the landlord to his payoff from eviction ($\Pi^A = \Pi^E$), the outcome when the tenant makes a take-it-or-leave-it offer. Second, industry guidance encourages landlords to adopt clear, standardized policies for delinquency and workout arrangements rather than tailoring the amount forgiven to each case, in part to limit Fair Housing risks from differential treatment.[49] Finally, $\theta$ has a simple empirical counterpart. Writing $S \equiv \theta k_L$ for the rent forgiveness, $\theta = S/k_L$ is the ratio of the amount forgiven to the landlord's eviction cost, and Section 4.4 calibrates $S$ to the observed arrears and the share repaid. For a fixed $\theta$, a feasible accommodation contract satisfies $r_1, r_2 \geq 0$, $r_2 \leq m$, and $r_1 + \beta r_2 = R - S$, and these together

interactions and reputational concerns that sustain informal accommodations.

[47] With the constraints above, a feasible accommodation would, at most, provide a landlord payoff equal to that under full payment.

[48] A landlord pricing shock by shock would hold each accommodated tenant near indifference, forgiving little for moderate shocks. The observed arrears, however, often go unpaid: at two to three months behind, owners expect partial forgiveness to be the most common resolution (Decker, 2021, Figure 13), and landlord interviews describe the same practice (Balzarini and Boyd, 2021).

[49] For example, the Fair Housing Institute advises property managers that late-fee waivers should be applied uniformly, with exceptions documented, and that landlords negotiating rent or payment methods should "apply the same criteria to all residents" to avoid discrimination under the Fair Housing Act (Fair Housing Institute). The National Apartment Association similarly recommends "consistent policies for all delinquent accounts," warning that problems often arise when special cases depart from internal practices (National Apartment Association).

constrain the largest feasible catch-up payment at $r_2 \leq \bar{m}$ where $\bar{m} \equiv \min\{m, (R-S)/\beta\}$.

With the present value of payments fixed at $R - S$, what remains is the timing of the payments: how much the tenant pays in period 1 ($r_1$) and how much is deferred to period 2 ($r_2$). The landlord's profit is the same under every feasible split, and any accepted contract leaves him surplus $(1-\theta)k_L$ over eviction. Since he observes $\varepsilon$, he chooses the split that the tenant values most at each shock, equivalently maximizing the range of shocks over which the accommodation is accepted. That offer smooths the tenant's consumption across period 1 and period 2 as far as the feasibility constraints allow.[50] Online Appendix C.1.2 formally states the tenant's best feasible contract over the range of possible shocks. Let $\varepsilon^{\text{cap}} \equiv S + (1+\beta)\bar{m}$. For $\varepsilon \leq \varepsilon^{\text{cap}}$ the contract smooths consumption perfectly across both periods.[51] For $\varepsilon > \varepsilon^{\text{cap}}$, only partial smoothing is possible because the period 2 enforcement cap binds, and the landlord offers the largest self-enforcing deferral: $r_1^* = R - S - \beta\bar{m}$ and $r_2^* = \bar{m}$. Let $V^A(\varepsilon)$ be the tenant's payoff under the best feasible contract.

### 4.2. Full Payment, Accommodation, or Eviction

Whether a given shock $\varepsilon$ leads to full payment, accommodation, or eviction depends on the tenant's utility under the three outcomes. When $U^F(\varepsilon) > U^E(\varepsilon)$, the landlord offers no accommodation and the tenant pays in full. Otherwise, the landlord offers an accommodation and the tenant accepts when $V^A(\varepsilon) \geq U^E(\varepsilon)$, and is evicted when $V^A(\varepsilon) < U^E(\varepsilon)$. Under the payoffs of Section 4.1, stated formally in Online Appendix C.1.1, the following ordering holds:

**Proposition 1** (Three regions)**.** *Under these conditions there exist unique thresholds* $0 < \varepsilon^F < \varepsilon^E < \bar{\varepsilon}$ *such that the tenant pays in full for* $\varepsilon \in [0, \varepsilon^F)$*, receives an accommodation for* $\varepsilon \in [\varepsilon^F, \varepsilon^E]$*, and is evicted for* $\varepsilon \in (\varepsilon^E, \bar{\varepsilon}]$*.*

The proof is in Online Appendix C.1.3. Figure 5 illustrates the three regions. For small shocks, the landlord offers no accommodation. For moderate shocks, the parties reach a mutually beneficial accommodation agreement. For tenants, the surplus comes from two sources: the deferral of the period 1 payment ($r_1 \leq R$), which is valuable even if repaid in full, and rent forgiveness ($r_1 + \beta r_2 = R - S$) that lowers the total payments of tenants facing moderate shocks by $S$. Together, these generate surplus over the tenant's outside

[50] The landlord need not personalize the timing. Since the tenant can save but not borrow, the largest enforceable deferral is weakly best at every shock, so offering the single contract $(R-S-\beta\bar{m}, \bar{m})$ implements the same allocation, with tenants who need less deferral saving the difference (Online Appendix C.2.1).

[51] For shocks $\varepsilon < S$ the transfer more than covers the shortfall and the contract defers nothing ($r_2^* = 0$). She equalizes consumption by saving the excess.

option of eviction.[52] For landlords, the surplus comes from avoiding eviction costs, as any accommodation agreement saves the landlord $(1-\theta)k_L$. For large shocks, there is no feasible accommodation agreement that provides the tenant with more utility than eviction, so the tenant refuses any accommodation and the outcome is eviction.

The benefits of rent accommodations have two broader implications. First, allowing for accommodations can alter the standard view of consumption commitments such as housing. In a model without accommodations or eviction, Chetty and Szeidl (2007) shows that housing's adjustment costs limit a household's ability to smooth consumption when facing small to moderate shocks because, with housing expenses fixed, the tenant must concentrate all expenditure reductions on the subset of flexible goods. The negative effects of commitments are strongest when the household also faces credit constraints. Accommodations can partly offset these negative effects because they provide a source of liquidity that is bundled with the consumption commitment. Relative to full payment, an accommodation lowers the period 1 payment from $R$ to $r_1$, raising resources in the shocked period by $R - r_1 = S + \beta r_2$, the forgiveness plus the deferred payment, and it does so without requiring a move. A tenant who cannot borrow elsewhere uses these resources to smooth consumption, and for shocks below $\varepsilon^{\text{cap}}$ the resulting consumption path is fully smooth (Section 4.1).[53] The key insight is that, for housing, moves are costly for both landlords and tenants, which creates opportunities for informal arrangements to avoid the adjustment costs.

Second, the accommodations carry an implication for rents. At the contracted rent, allowing accommodations raises the landlord's expected profit relative to a landlord that evicts all tenants who miss payments. Each accommodation replaces an eviction and saves him $(1-\theta)k_L$, so expected revenue is higher by $(1-\theta)\, k_L \big[G(\varepsilon^E) - G(\varepsilon^F)\big]$ per lease compared to a regime where all missed payments, i.e., every shock beyond $\varepsilon^F$, ends in eviction. The rent is exogenous here, but with free entry and competitive pricing these additional profits would be passed through to a lower equilibrium rent.[54]

[52] Beyond the catch-up payment, the model attaches no separate cost to missing rent. Any residual cost, such as the hassle of negotiating or future credit market penalties (although missed rent is rarely reported), is simple to add as a utility cost $\phi > 0$ borne under accommodation. This shifts the value of accommodations, $V^A$, down, so $\varepsilon^E$ falls: the same tenants are offered accommodations, fewer accept, and evictions rise.

[53] The two components are valuable to the tenant for different reasons. The deferral matters only because utility is concave, and the smoothing value would disappear as $\rho \to 0$. The forgiveness does not require risk aversion, and as $\rho \to 0$ the accommodation raises her payoff by exactly $S$.

[54] The comparison holds the tenant pool fixed. If the option to accommodate changes who rents, tenant screening could offset part of the discount.

### 4.3. Why the Landlord and Not a Third Party

The deferral is a loan and the forgiveness is an insurance transfer. For the loan, an accommodated tenant effectively borrows $R - r_1$ in period 1 and repays in period 2. For insurance, an accommodated tenant receives a discount of $S$ on the present value of rent. This section examines the three features that give rise to such landlord accommodations, each of which contributes to the liquidity renters receive. The landlord's eviction costs fund the insurance transfer, the tenant's moving costs enforce the catch-up payment, and observability of the shock targets the accommodations. The comparative statics and proofs are in Online Appendix C.2.

*Eviction and Moving Costs.* The insurance component of accommodations is present because the landlord faces eviction cost $k_L$, which makes him willing to offer accommodations that generate losses $S$ relative to full payment. If $k_L \to 0$, the accommodation survives only as a loan that must be repaid in full ($S = 0$). Any repayment included in the loan portion of the accommodations is made possible by the moving costs $m$, which act as the landlord's enforcement technology. Lowering $m$ reduces the enforceable catch-up payment in period 2, which in turn reduces the amount that could be borrowed ($R - r_1$) while holding the present value of payments fixed. Third parties could not replicate either of these features. Since third parties do not internalize eviction costs, contracts that transfer $S > 0$ to tenants would generate losses. In addition, third parties likely have weaker enforcement. Section 3.4 shows that renters struggling with housing payments already have poor credit histories and almost no liquid wealth, limiting the impact of the additional credit market penalties or garnishment available to unsecured lenders.

*Observability.* The other feature supporting the insurance component is that the landlord observes the shock $\varepsilon$, allowing him to target accommodations only to tenants with a credible threat not to pay in full. Without observability of the shock, any accommodation offered would be available to all shocked tenants.[55] Tenants then, with private information about $\varepsilon$, decide whether to take the accommodation, pay in full, or refuse payment and face eviction.

I first consider whether an accommodation like that in Section 4.2, which transfers a fixed $S$ to the tenant, survives without observability. The landlord can post any accommodation $(r_1, r_2)$ satisfying the feasibility conditions and transferring $S$ to the tenant, i.e., $r_1 + \beta r_2 = R - S$. The landlord weighs the surplus from avoided evictions, $(1 - \theta)k_L$, against the losses

[55] In theory, landlords could also post a menu of contracts. Online Appendix C.2.1 shows that offering a menu does not change the result. For any posted menu of accommodations (with fixed present value), all accepting tenants will choose the contract with the deepest deferral (smallest $r_1$).

from offering accommodations to those who otherwise would have paid in full ($S$). As a result, the landlord's decision of whether to post any accommodation offer depends on the take-up decisions over the distribution of shocks $G(\varepsilon)$:

**Proposition 2** (Unraveling threshold)**.** *Under unobservability, the landlord's optimal posting is the deepest deferral* $(r_1, r_2) = (R - S - \beta\bar{m},\, \bar{m})$ *and it is accepted by all tenants with* $\varepsilon \leq \varepsilon^E$*. The landlord prefers posting it over offering no accommodation if and only if*

$$\theta < p_{\text{acc}} \equiv \frac{G(\varepsilon^E) - G(\varepsilon^F)}{G(\varepsilon^E)}. \tag{8}$$

Landlords will only offer the accommodation when $p_{\text{acc}}$, the share of accepting tenants who would have otherwise been evicted, exceeds the share of the landlord's surplus transferred to tenants, $\theta$.

Even if accommodations transferring $S$ unravel, other accommodations may survive. An extension in Online Appendix C.3 lets the landlord choose the transfer $s$ freely. Let $\varepsilon^B(s)$ be the largest shock at which the tenant accepts the optimal accommodation transferring $s$, with $\varepsilon^B(S) = \varepsilon^E$. This threshold $\varepsilon^B(s)$ is increasing in $s$. Posting an accommodation of $s$ changes the landlord's expected revenue, relative to offering no accommodations and evicting all missed payments, by

$$\Delta(s) = (k_L - s)\big[G(\varepsilon^B(s)) - G(\varepsilon^F)\big] - s\, G(\varepsilon^F). \tag{9}$$

The first term represents the gain from avoided evictions and the second term represents the losses from accepters who would have otherwise paid in full. The landlord is willing to offer a contract transferring $s$ whenever $\Delta(s) > 0$, which occurs whenever $\frac{s}{k_L} < p_{\text{acc}}(s)$, where $p_{\text{acc}}(s) = [G(\varepsilon^B(s)) - G(\varepsilon^F)]/G(\varepsilon^B(s))$. This mirrors the condition for the fixed $S$ above, and it leads to two bounds. At the lower end, pure lending with full repayment ($s = 0$) always survives without observability, as $p_{\text{acc}}(0) > 0$. This roughly matches standard lease contracts with fees for late payments and no forgiveness. At the upper end, since $G(\varepsilon^B(s)) \leq 1$, the largest forgiveness transfer that can survive without observability is $k_L[1 - G(\varepsilon^F)]$. With landlord eviction costs around \$3,500 (SmartMove, 2022), and the estimates indicating that fewer than 10% of job-losing renters are induced to miss rent, the implied upper bound on forgiveness is about \$330, much lower than one month of rent.

The contracts so far do not use the threat of eviction to discourage take-up. Online Appendix C.3 expands the contract space to let the landlord commit to evicting each tenant who misses with some exogenous probability. This deters some tenants from claiming the accommodation, but the targeting remains weaker than that under observability. I further

examine the role of random evictions in deterring take-up under the calibrated model in the next section.

### 4.4. Calibration and Empirical Tests

*Calibration.* An illustrative calibration (details in Online Appendix C.4.1) shows the model can reproduce this paper's main facts at reasonable parameter values, and lets me examine the mechanisms quantitatively. I calibrate the tenant's surplus share $\theta$, the moving cost $m$, and a two-parameter Weibull distribution of shocks to match four moments from the empirical sections: the job-loss effect on renters' missed payments, the eviction rate conditional on a missed payment, the arrears accumulated per accommodation (3 months' rent, the SHED 75th percentile), and the share repaid (50%, SHED's share of arrears resolved). Given the lack of information on the total utility costs of eviction to households, I choose a reasonable but arbitrary eviction payoff and examine the robustness across the range of payoffs satisfying the key restrictions.[56] The calibration implies that tenants keep a share $\theta = 0.43$ of the eviction cost the landlord avoids, that accommodations leave $S = 1.5$ months of rent uncollected, and that the fitted moving cost enforcing repayment is about 1.6 months of rent.

Two simple counterfactuals follow. First, without accommodations, every shock past $\varepsilon^F$ would end in eviction, increasing the evictions caused by job loss from 0.9% to 9.3% of job-losing renters.[57] This is a direct result of the estimated rates of missed payments and evictions, combined with the model's structure, in which each accommodation replaces what would be an eviction. Second, if the landlord could not observe the shock, the observed terms of the accommodations (2 to 3 months of rent, half repaid) would unravel: the tenant's surplus share, $\theta = 0.43$, sits well above the share of accepting tenants who would otherwise have been evicted, $p_{\text{acc}} = 0.09$, so posting the observed terms to every tenant would lose money. Neither counterfactual depends on the assumed eviction payoff.[58]

The calibration also puts magnitudes on the two extensions. The first asks what alternative accommodations could survive unobservability. Sweeping across possible transfers, the largest transfer a landlord would post is only 0.20 months of rent, fewer tenants would

[56]The baseline values assume an eviction penalty equal to a 10% increase in rent payments, and a consumption-smoothing benefit (rent reduction, eviction assistance) that replaces $\frac{1}{8}$ of lost income, with consumption smoothed over both periods.

[57]Within the model, it is possible to quantify the welfare impact of avoided eviction. I avoid this, however, as the welfare impact depends heavily on the tenant's utility under the evictions that would otherwise occur.

[58]For the first counterfactual, both eviction shares are set by the observed missed payments and eviction rates. For the unraveling threshold, the surplus share $\theta$ is fixed by the draw and the share repaid, given $k_L$, while $p_{\text{acc}}$ is the ratio of the observed share of job-losing renters who miss without being evicted to the share not evicted.

receive accommodations, and evictions rise. Between 3.9% and 4.8% of job-losing renters are evicted under the surviving contracts, against 0.9% under observability. The second asks whether committing to evict claimants at some probability $q$ improves targeting. The smallest eviction probability that deters any tenant who would otherwise pay in full is 38% and no eviction probability raises the largest surviving transfer. This threshold does depend on the assumed eviction payoff, since a more painful eviction is a better deterrent. Across the eviction payoffs and the repayment shares (20% to 75%) in Online Appendix Tables C.2 and C.3, the smallest $q$ that deters claimants ranges from 23% to 61%, and in no row does any eviction probability make the observable accommodation terms profitable to post. The accommodation fitted under observability unravels in every row.

*Empirical Tests.* The model has three implications that can be taken to the data, distinct from the earlier empirical results. Table 7 reports the results. First, Proposition 1 states that small shocks end in full payment, moderate shocks in accommodations (missed payments without eviction), and large shocks in eviction. Using unemployment duration in the SIPP as the measure of shock size, Panel A corroborates this ordering. Among renting job losers, mean weeks unemployed in the first year increases as one moves from those who paid in full, to those who missed payments without eviction, to those who were evicted. Relative to renters who paid in full, it is 2.1 weeks higher among those who missed without eviction ($p = 0.051$) and 7.2 weeks higher among those evicted ($p = 0.042$). The shares of unemployment durations exceeding 3 and 6 months follow the same ordering, and the differences relative to renters paying in full are statistically significant at the 5% level.

Second, under the calibrated shock distribution, tenants who miss housing payments cut consumption (relative to an unshocked tenant) more than those who paid in full. Panel B shows the same ordering. Among ALP job losers who did not move, those who cut the housing payment by 25% or more changed nondurable spending by -21.6% relative to households with no job loss, against -6.4% among job losers who kept paying. The two groups differ from each other by 15.2 percentage points ($p = 0.015$). Restricting the sample to renters, the point estimates are similar but imprecise.

Finally, the model predicts that, when shocks are observable to landlords, missed payments are less likely to end in eviction. I test this by examining whether landlords that are closer to their tenants are less likely to threaten eviction conditional on missed payments. The 2017 AHS records each unit's building size and whether an owner or manager lives on site, and shows the predicted pattern (Panel C).[59] The omitted class is the landlord with the

[59] Analyzing the 2018 Rental Housing Finance Survey, Cororaton (2020) reports that roughly 72% of rental units in properties with fewer than five units are owned by individual investors and that more than 70% are

least observability, a building of five or more units with no owner or manager on site. Relative to the omitted group, and after controlling for tenant and unit characteristics, tenants in small buildings (four units or fewer) are 7.1pp less likely to be threatened after missing, and tenants in large buildings with an owner or manager on site are 7.2pp less likely. The unadjusted differences are similar, 8.9pp and 6.8pp, so the pattern is not driven by tenant composition (Online Appendix C.4.2). Formal eviction notices show the qualitative pattern but are not statistically significant.

## 5. Conclusion

Housing is often viewed as a consumption commitment. When households face shocks, however, housing payments can be quite flexible. Upon job loss, households often fall behind on housing payments and, for renters, the average reduction in housing expenditure is similar to the reduction in nondurable expenditure. Fewer than 10% of these missed payments lead to eviction, and forced moves seem uncommon. Instead, missed payments are an informal source of liquidity provided by landlords, often used by households with few alternative sources of liquidity.

To explain why landlords extend this liquidity, I develop a stylized model in which rent accommodations arise as a mutually beneficial arrangement. Rent accommodations are supported by three features unique to the landlord-tenant relationship: landlords face eviction costs, they can enforce partial repayment through the threat of lease nonrenewal, and landlords observe the tenant's circumstances. For otherwise constrained households, rent accommodations provide liquidity that can support consumption smoothing over shocks, potentially having implications for the design of social insurance. The amount of liquidity landlords provide can itself be a policy parameter, shaped by eviction and tenant-protection laws.

More evidence is needed to conduct a complete welfare or policy analysis of the impact of missed payments. There are likely general equilibrium responses to the ability to miss payments. Landlords and lenders may adjust rent prices, interest rates, or screening to compensate. Accounting for these potential costs is necessary for understanding the total welfare impact of missed payments, and the costs must be weighed against the benefits of the liquidity provided by missed payments.

managed day-to-day by the owner.

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Table 1: Summary statistics

| | Job Loss | | No Job Loss | |
|---|---|---|---|---|
| | Mean | Median | Mean | Median |
| **Panel A: Survey of Income and Program Participation** | | | | |
| *Missed Payments and Eviction* | | | | |
| Missed housing payment (%) | 15.0 | 0.0 | 5.2 | 0.0 |
| Eviction in prior 12 months (%) | 0.6 | 0.0 | 0.2 | 0.0 |
| *Demographic Characteristics* | | | | |
| Homeowner (%) | 59.8 | 100.0 | 69.3 | 100.0 |
| Annual household income ($1,000s) | 76.7 | 63.3 | 86.9 | 71.3 |
| Age | 41.3 | 42.0 | 41.6 | 41.0 |
| Married (%) | 60.0 | 100.0 | 61.7 | 100.0 |
| Household size | 3.2 | 3.0 | 2.8 | 3.0 |
| Race: Black (%) | 11.4 | 0.0 | 9.0 | 0.0 |
| Ethnicity: Hispanic (%) | 12.7 | 0.0 | 7.8 | 0.0 |
| Educ.: Less Than HS (%) | 13.5 | 0.0 | 7.0 | 0.0 |
| Educ.: HS (%) | 27.2 | 0.0 | 22.9 | 0.0 |
| Educ.: Some College (%) | 34.3 | 0.0 | 33.6 | 0.0 |
| Educ.: College (%) | 16.5 | 0.0 | 22.5 | 0.0 |
| Educ.: Grad School (%) | 8.5 | 0.0 | 14.0 | 0.0 |
| *Financial Characteristics* | | | | |
| Liquid assets ($1,000s) | 21.3 | 1.4 | 38.7 | 3.3 |
| Liquid assets / monthly income | 3.2 | 0.3 | 5.1 | 0.6 |
| Has unsecured debt (%) | 69.3 | 100.0 | 68.9 | 100.0 |
| Unsecured debt ($1,000s) | 13.4 | 2.9 | 12.5 | 2.5 |
| Unsecured debt / monthly income | 3.3 | 0.5 | 3.1 | 0.4 |
| Housing costs ($1,000s) | 1.3 | 1.2 | 1.4 | 1.2 |
| Housing costs / income (%) | 35.3 | 22.3 | 33.3 | 21.3 |
| Observations | 4,465 | | 51,088 | |
| **Panel B: RAND ALP Financial Crisis Surveys** | | | | |
| *Post-period Characteristics* | | | | |
| Missed housing payment, 2+ months (%) | 9.5 | 0.0 | 2.0 | 0.0 |
| Eviction or foreclosure notice (%) | 2.9 | 0.0 | 0.8 | 0.0 |
| Moved (%) | 9.2 | 0.0 | 3.9 | 0.0 |
| $\Delta$ Housing expenditure (%) | -6.1 | -1.2 | -1.1 | -0.9 |
| $\Delta$ Utility expenditure (%) | -1.6 | -2.9 | 2.3 | 0.1 |
| $\Delta$ Bills (%) | -4.6 | -2.4 | -0.1 | -0.7 |
| $\Delta$ Nondurable expenditure (%) | -4.4 | -6.6 | 3.4 | 0.4 |
| $\Delta$ Total income (%) | -23.7 | -22.5 | 2.9 | 0.3 |
| *Pre-period Characteristics* | | | | |
| Homeowner (%) | 62.4 | 100.0 | 74.5 | 100.0 |
| Monthly household income ($1,000s) | 5.8 | 4.3 | 7.7 | 5.8 |
| Credit card debt ($1,000s) | 6.0 | 0.3 | 5.9 | 0.5 |
| Housing costs ($1,000s) | 1.2 | 0.9 | 1.2 | 1.0 |
| Housing costs / income (%) | 28.0 | 21.3 | 21.7 | 17.9 |
| Utility costs / income (%) | 11.1 | 8.1 | 8.3 | 6.5 |
| Bills / income (%) | 44.5 | 34.6 | 34.4 | 29.5 |
| Nondurable expenditure / income (%) | 23.7 | 18.6 | 19.5 | 16.9 |
| Observations | 452 | | 19,783 | |

*Notes:* Panel A is the 1991–2008 SIPP, one observation per household over the twelve-month payment-assessment period; Panel B is quarterly household-level observations from the RAND ALP, 2009–2016. Sections 2.1 and 2.2 give the sample restrictions. Columns report means and medians separately for households that did and did not experience a job loss, in the prior year (Panel A) or in quarter $t$ (Panel B). Dollar values are deflated to 2014$. In Panel A, the income row is annualized from the four months preceding the payment-assessment period, and the monthly income in the ratio denominators is the average over those same four months. In Panel B, pre-period characteristics are averages over quarters $t-3$ to $t-1$ and post-period characteristics over quarters $t$ and $t+1$; ratios to income are winsorized at the 1st and 99th percentiles and the $\Delta$ percent changes at $\pm 100\%$.

Table 2: Frequency of missed housing payments after job loss

| | Dependent Variable: Missed Housing Payment | | | | | | |
|---|---|---|---|---|---|---|---|
| | OLS | OLS | OLS | IPW | Reg.-adj. IPW | OLS | OLS |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| **Panel A: All Respondents** | | | | | | | |
| Job loss | 0.096*** | 0.079*** | 0.078*** | 0.078*** | 0.078*** | 0.097*** | 0.076*** |
| | (0.006) | (0.006) | (0.006) | (0.006) | (0.005) | (0.010) | (0.012) |
| Mean Dep. | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.055 | 0.054 |
| N Job loss | 4,465 | 4,465 | 4,465 | 4,465 | 4,465 | 1,558 | 1,177 |
| Observations | 55,553 | 55,553 | 55,553 | 55,553 | 55,553 | 52,646 | 52,265 |
| **Panel B: Renters** | | | | | | | |
| Job loss | 0.117*** | 0.094*** | 0.093*** | 0.094*** | 0.094*** | 0.123*** | 0.100*** |
| | (0.011) | (0.010) | (0.010) | (0.011) | (0.010) | (0.014) | (0.015) |
| Mean Dep. | 0.096 | 0.096 | 0.096 | 0.096 | 0.096 | 0.089 | 0.087 |
| N Job loss | 1,796 | 1,796 | 1,796 | 1,796 | 1,796 | 595 | 427 |
| Observations | 17,473 | 17,473 | 17,473 | 17,473 | 17,473 | 16,272 | 16,104 |
| **Panel C: Owners with Mortgage** | | | | | | | |
| Job loss | 0.075*** | 0.065*** | 0.064*** | 0.064*** | 0.064*** | 0.077*** | 0.060*** |
| | (0.007) | (0.007) | (0.007) | (0.007) | (0.006) | (0.013) | (0.015) |
| Mean Dep. | 0.043 | 0.043 | 0.043 | 0.043 | 0.043 | 0.040 | 0.039 |
| N Job loss | 2,669 | 2,669 | 2,669 | 2,669 | 2,669 | 963 | 750 |
| Observations | 38,080 | 38,080 | 38,080 | 38,080 | 38,080 | 36,374 | 36,161 |
| *Controls* | | | | | | | |
| Demo. & Financial: | | X | X | X | X | X | X |
| State Economic: | | | X | X | X | X | X |
| Year FE | X | X | X | X | X | X | X |
| State FE | | | X | X | X | X | X |
| Sample Restriction | | | | | | Invol. 1 | Invol. 2 |

*Notes:* Data are the 1991–2008 SIPP, one observation per household over the twelve-month payment-assessment period. The dependent variable is an indicator for missing a housing payment during the payment-assessment period. Estimates are from equation (1). Columns (1)–(3) are OLS, adding in turn year fixed effects, the demographic and financial controls, and the state economic controls with state fixed effects. Columns (4) and (5) report the effect of job loss on job losers by IPW and by regression-adjusted IPW. Columns (6) and (7) restrict the sample to the two involuntary-job-loss definitions. Standard errors are clustered by state, except column (5), which reports HC3 delta-method standard errors.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: Changes in expenditure after job loss

| | *Dependent variable:* | | | | |
|---|---|---|---|---|---|
| | Δincome (%) | Behind housing 2+ months | Δhousing (%) | Δbills (%) | Δnondurable (%) |
| | (1) | (2) | (3) | (4) | (5) |
| **Panel A: All respondents** | | | | | |
| Job loss | $-0.263^{***}$ | $0.075^{***}$ | $-0.048^{***}$ | $-0.043^{***}$ | $-0.079^{***}$ |
| | (0.018) | (0.014) | (0.014) | (0.013) | (0.017) |
| N spells: | 452 | 452 | 452 | 452 | 452 |
| Observations | 20,227 | 20,235 | 20,235 | 20,235 | 20,235 |
| **Panel B: Renters** | | | | | |
| Job loss | $-0.294^{***}$ | $0.079^{***}$ | $-0.075^{***}$ | $-0.065^{***}$ | $-0.072^{**}$ |
| | (0.033) | (0.024) | (0.025) | (0.024) | (0.031) |
| N spells: | 170 | 170 | 170 | 170 | 170 |
| Observations | 5,208 | 5,211 | 5,211 | 5,211 | 5,211 |
| **Panel C: Owners** | | | | | |
| Job loss | $-0.246^{***}$ | $0.069^{***}$ | $-0.036^{**}$ | $-0.033^{**}$ | $-0.083^{***}$ |
| | (0.021) | (0.017) | (0.016) | (0.014) | (0.019) |
| N spells: | 282 | 282 | 282 | 282 | 282 |
| Observations | 15,019 | 15,024 | 15,024 | 15,024 | 15,024 |
| *Fixed-effects* | | | | | |
| Year-quarter | Yes | Yes | Yes | Yes | Yes |

*Notes:* Data are quarterly household-level observations from the RAND ALP, 2009–2016. The dependent variables are the percent change in household income (column 1), an indicator for being two or more months behind on housing payments in quarter $t$ or $t+1$ (column 2), and the percent change in monthly housing payments (column 3), monthly bill payments, the sum of housing, utility, and auto payments (column 4), and monthly nondurable expenditure (column 5). The pre-period is the average over quarters $t-3$ through $t-1$ and the post-period the average over quarters $t$ and $t+1$. Estimates are from equation (2). All columns include year-quarter fixed effects. Heteroskedasticity-robust standard errors are in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Changes in expenditure after job loss, by quantile

| | Quantile Treatment Effect | | | | | |
|---|---|---|---|---|---|---|
| | All | | Renters | | Owners | |
| Quantile | housing (1) | nondurable (2) | housing (3) | nondurable (4) | housing (5) | nondurable (6) |
| 0.05 | -0.202** | -0.134*** | -0.341*** | -0.156** | -0.147 | -0.119*** |
| | (0.082) | (0.024) | (0.1) | (0.062) | (0.092) | (0.027) |
| 0.1 | -0.164*** | -0.131*** | -0.315*** | -0.119** | -0.104** | -0.108*** |
| | (0.049) | (0.026) | (0.08) | (0.05) | (0.047) | (0.026) |
| 0.15 | -0.153*** | -0.124*** | -0.269*** | -0.133*** | -0.081** | -0.117*** |
| | (0.033) | (0.016) | (0.068) | (0.041) | (0.041) | (0.018) |
| 0.2 | -0.105*** | -0.126*** | -0.222*** | -0.125*** | -0.055* | -0.12*** |
| | (0.032) | (0.015) | (0.068) | (0.034) | (0.029) | (0.018) |
| 0.3 | -0.037*** | -0.109*** | -0.046 | -0.098*** | -0.034** | -0.112*** |
| | (0.014) | (0.018) | (0.041) | (0.037) | (0.016) | (0.021) |
| 0.4 | -0.005 | -0.096*** | 0 | -0.07* | -0.01 | -0.1*** |
| | (0.005) | (0.018) | (0.006) | (0.039) | (0.007) | (0.02) |
| 0.5 | 0 | -0.078*** | -0.001 | -0.052** | -0.001 | -0.089*** |
| | (0) | (0.014) | (0.001) | (0.026) | (0.002) | (0.016) |
| 0.75 | -0.008 | -0.066*** | -0.011 | -0.046 | -0.006 | -0.081*** |
| | (0.005) | (0.019) | (0.008) | (0.034) | (0.007) | (0.024) |
| 0.95 | -0.005 | 0.021 | 0.028 | -0.032 | -0.024 | -0.006 |
| | (0.068) | (0.092) | (0.155) | (0.102) | (0.069) | (0.111) |

*Notes:* Data are quarterly household-level observations from the RAND ALP, 2009–2016. Each cell reports the job-loss coefficient from a separate quantile regression of equation (2), with the row giving the quantile and the column the dependent variable. Columns (1) and (2) use all respondents, columns (3) and (4) renters, and columns (5) and (6) owners with a mortgage. Bootstrap standard errors from 500 replications are in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Impact of job loss on eviction

| | Dependent Variable: Evicted for Nonpayment | | | | | | |
|---|---|---|---|---|---|---|---|
| | OLS | OLS | OLS | IPW | Reg.-adj. IPW | OLS | OLS |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| **Panel A: All Respondents** | | | | | | | |
| Job loss | 0.005*** | 0.004*** | 0.004*** | 0.004*** | 0.004*** | 0.005** | 0.002 |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.002) | (0.002) |
| Mean Dep. | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| N Job loss | 4,465 | 4,465 | 4,465 | 4,465 | 4,465 | 1,558 | 1,177 |
| Observations | 55,543 | 55,543 | 55,543 | 55,543 | 55,543 | 52,636 | 52,255 |
| **Panel B: Renters** | | | | | | | |
| Job loss | 0.010*** | 0.009*** | 0.009*** | 0.009*** | 0.009*** | 0.011** | 0.003 |
| | (0.003) | (0.003) | (0.003) | (0.003) | (0.003) | (0.004) | (0.003) |
| Mean Dep. | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.003 |
| N Job loss | 1,796 | 1,796 | 1,796 | 1,796 | 1,796 | 595 | 427 |
| Observations | 17,470 | 17,470 | 17,470 | 17,470 | 17,470 | 16,269 | 16,101 |
| **Panel C: Owners with Mortgage** | | | | | | | |
| Job loss | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.002 | 0.001 |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.002) | (0.002) |
| Mean Dep. | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| N Job loss | 2,669 | 2,669 | 2,669 | 2,669 | 2,669 | 963 | 750 |
| Observations | 38,073 | 38,073 | 38,073 | 38,073 | 38,073 | 36,367 | 36,154 |
| *Controls* | | | | | | | |
| Demo. & Financial: | | X | X | X | X | X | X |
| State Economic: | | | X | X | X | X | X |
| Year FE | X | X | X | X | X | X | X |
| State FE | | | X | X | X | X | X |
| Sample Restriction | | | | | | Invol. 1 | Invol. 2 |

*Notes:* Data are the 1991–2008 SIPP, one observation per household over the twelve-month payment-assessment period. The dependent variable is an indicator for being evicted for nonpayment. The column structure, specifications, controls, weighting, and standard errors match Table 2.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: Impact of missed payments on moving out

| | Dependent Variable: Moved within 12 Months of Job Loss | | | | | | |
|---|---|---|---|---|---|---|---|
| | OLS | OLS | OLS | IPW | Reg.-adj. IPW | OLS | OLS |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| **Panel A: All Respondents** | | | | | | | |
| Missed payment | 0.063*** | 0.036** | 0.035** | 0.026 | 0.026 | -0.003 | -0.012 |
| | (0.016) | (0.016) | (0.016) | (0.016) | (0.022) | (0.036) | (0.034) |
| Mean Dep. | 0.142 | 0.142 | 0.142 | 0.142 | 0.142 | 0.143 | 0.133 |
| N missed | 483 | 483 | 483 | 483 | 483 | 185 | 122 |
| Observations | 3,206 | 3,206 | 3,206 | 3,206 | 3,206 | 1,102 | 827 |
| **Panel B: Renters** | | | | | | | |
| Missed payment | -0.010 | 0.014 | 0.026 | 0.028 | 0.026 | -0.012 | -0.051 |
| | (0.026) | (0.024) | (0.024) | (0.026) | (0.037) | (0.055) | (0.059) |
| Mean Dep. | 0.296 | 0.296 | 0.296 | 0.296 | 0.296 | 0.284 | 0.269 |
| N missed | 243 | 243 | 243 | 243 | 243 | 90 | 58 |
| Observations | 1,157 | 1,157 | 1,157 | 1,157 | 1,157 | 391 | 286 |
| **Panel C: Owners with Mortgage** | | | | | | | |
| Missed payment | 0.049** | 0.049** | 0.046** | 0.046** | 0.046* | 0.010 | 0.009 |
| | (0.020) | (0.020) | (0.019) | (0.019) | (0.025) | (0.031) | (0.031) |
| Mean Dep. | 0.055 | 0.055 | 0.055 | 0.055 | 0.055 | 0.066 | 0.061 |
| N missed | 240 | 240 | 240 | 240 | 240 | 95 | 64 |
| Observations | 2,049 | 2,049 | 2,049 | 2,049 | 2,049 | 711 | 541 |
| *Controls* | | | | | | | |
| Demo. & Financial: | | X | X | X | X | X | X |
| State Economic: | | | X | X | X | X | X |
| Year FE | X | X | X | X | X | X | X |
| State FE | | | X | X | X | X | X |
| Sample Restriction | | | | | | Invol. 1 | Invol. 2 |

*Notes:* Data are the 1991–2008 SIPP, one observation per household, restricted to the job losers observed for at least twelve months after the loss who did not move in the four months before it. The dependent variable is an indicator for moving within twelve months of the job loss. Estimates are from equation (4). Columns (1)–(3) are OLS, adding in turn year fixed effects, the demographic and financial controls, and the state economic controls with state fixed effects. Columns (4) and (5) report the effect of missing a payment on those who miss by IPW and regression-adjusted IPW with the propensity score estimated on missing. Columns (6) and (7) restrict the sample to the two involuntary-job-loss definitions. The controls are those of Table 2. Standard errors are clustered by state, except column (5), which reports delta-method standard errors.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 7: Tests of the model's predictions

**Panel A. Shock size across the three regions (SIPP renting job losers)**

| | Mean weeks unemp., first year (KM) | Share still unemployed > 3 months | Share still unemployed > 6 months | $N$ |
|---|---|---|---|---|
| Paid in full | 23.7 | 0.62 | 0.34 | 1,434 |
| Missed, not evicted | 25.8 | 0.71 | 0.44 | 338 |
| Missed, evicted | 30.9 | 0.83 | 0.58 | 24 |

**Panel B. Period-1 consumption changes (%): model and ALP counterparts**

| | Model | All job losers | | | Renter job losers | | |
|---|---|---|---|---|---|---|---|
| | | Raw | Adjusted | $N$ | Raw | Adjusted | $N$ |
| Paid in full | −9.0 | −2.6 | −6.4*** (1.9) | 322 | −4.4 | −7.9** (3.5) | 105 |
| Missed (≥25% cut) | −22.4 | −17.8 | −21.6*** (5.8) | 52 | −16.6 | −20.2 (12.1) | 21 |
| No-job-loss mean (benchmark) | 0.0 | 3.7 | | 16,935 | 3.5 | | 3,915 |

**Panel C. Eviction escalation by landlord observability (2017 AHS), in percentage points**

| | Threat \| miss | | Notice \| miss | |
|---|---|---|---|---|
| | No controls | Controls | No controls | Controls |
| Small/individual landlord (≤4 units) | −8.90*** (3.15) | −7.10** (3.18) | −2.68* (1.53) | −2.11 (1.63) |
| Large (5+ units), owner/mgr on-site | −6.78 (4.28) | −7.24* (4.32) | −1.63 (2.16) | −1.94 (2.28) |
| Omitted class (absentee): mean | 23.35 | | 5.60 | |
| $n$ | 1,466 | | 1,470 | |

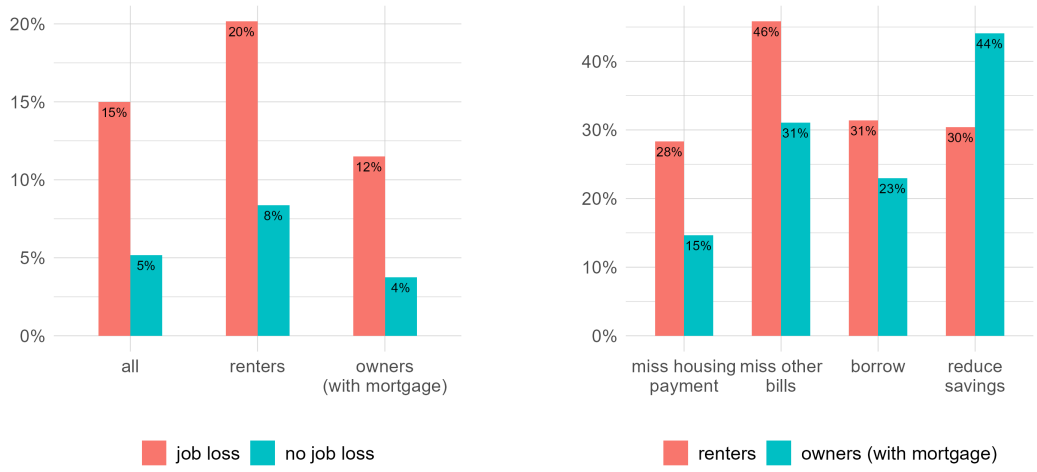
*Notes:* Online Appendix C.4.2 gives each test's construction, specification, and sample.

*Panel A.* The 1991–2008 SIPP job losers who rented before the loss, grouped by payment outcome. Mean weeks unemployed in the first year is a Kaplan–Meier restricted mean at a 52-week horizon. Each duration share is computed only on the spells ending or observed through the 3-month or 6-month horizon.

*Panel B.* The Model column averages the fitted model's period-1 consumption change over the corresponding region. The remaining columns show percent changes in nondurable spending between quarters −3 to −1 and quarters 0–1 among RAND ALP non-movers. Missed indicates a housing-payment cut of 25% or more from the pre-loss baseline. Adjusted subtracts the mean change among no-job-loss household-quarters, shown in the benchmark row.

*Panel C.* Weighted linear probability models on renter-occupied units in the 2017 AHS, in percentage points, with standard errors in parentheses from the survey's 160 replicate weights. Each outcome is reported with the landlord-class indicators alone and with tenant and unit controls added, on the same observations. Online Appendix Tables C.4 and C.5 list the controls and describe the estimation sample.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.




(a) Missed housing payments, by job loss

(b) Reported responses to lost income

Figure 1: Missed housing payments and other responses to job loss

*Notes:* Data are the 1991–2008 SIPP (panel a) and the RAND ALP, 2009–2016 (panel b), restricted in both to renters and owners with a mortgage. Panel (a) gives the share of households reporting a missed housing payment during the twelve-month payment-assessment period, for households that did and did not experience a job loss during that period. Panel (b) gives the weighted share of job-losing households reporting that they adjusted to the loss of income by falling behind on housing payments, postponing other bills, borrowing, or reducing savings. Respondents select from a list and may give several answers. The panel omits "Reduced spending," reported by 77% of renters and 87% of owners, and "None," reported by 5% of each. The ALP sample begins at wave 8, when borrowing was added to the list.

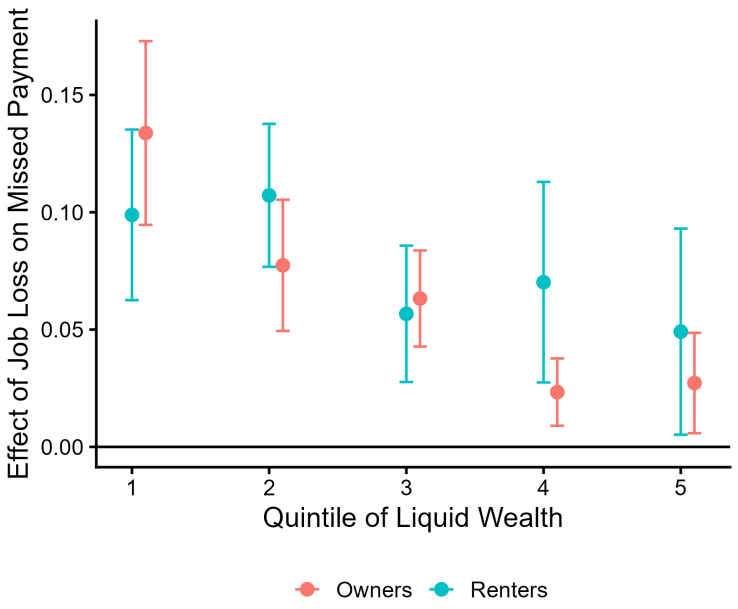
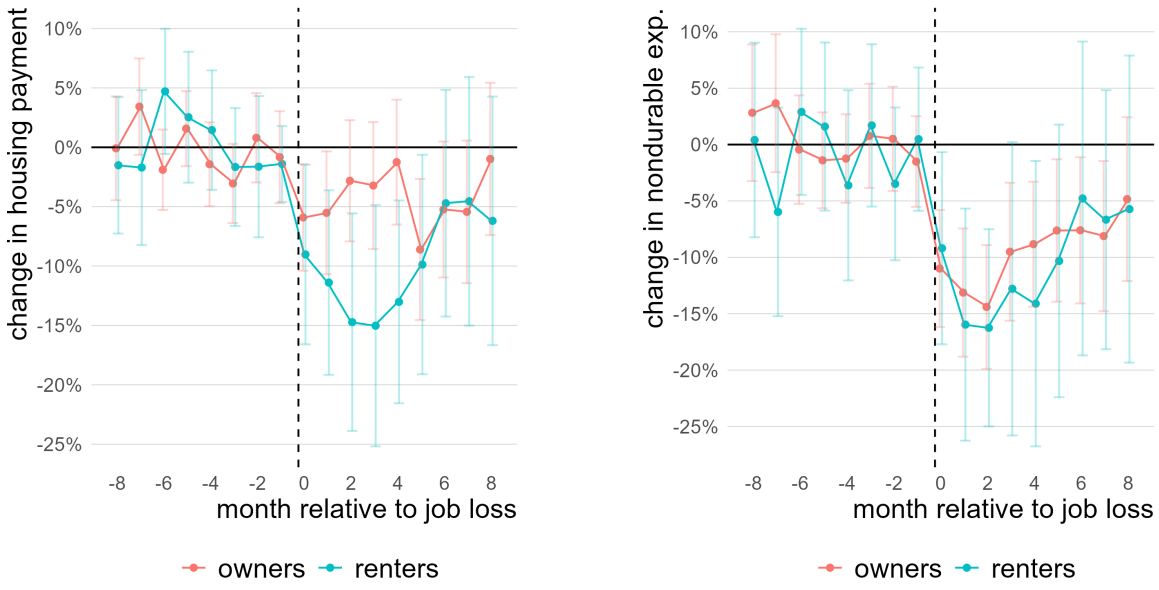



Figure 2: The effect of job loss on missed payments, by liquid wealth

*Notes:* Data are the 1991–2008 SIPP, one observation per household over the twelve-month payment-assessment period. The figure plots point estimates and 95% confidence intervals for the interaction of the job-loss indicator with indicators for the quintile of the household's liquid wealth in equation (1), estimated separately for renters and owners. The uninteracted job-loss indicator is omitted. Controls are the quintile indicators and those of Table 2 column (3), dropping that column's linear control for liquid assets, with state and year fixed effects. Standard errors are clustered by state. Online Appendix Figure A.6 re-estimates the figure keeping only job losers whose wealth was measured before the job loss.




(a) Housing

(b) Nondurables

Figure 3: Changes in expenditure around job loss

*Notes:* Data are the monthly RAND ALP, May 2009–April 2013. Estimates are from the local projections difference-in-differences specification of equation (3). Treated households are those experiencing their first job loss in month 0; the control group at horizon $h$ is households reporting no unemployment through month $t + h$. Each panel plots a different outcome. Online Appendix Figure A.3 plots the same specification for household income and for total bill payments. Error bars are 95% confidence intervals from heteroskedasticity-robust standard errors.


(a) Renters

(b) Owners

Figure 4: Move rates by missed-payment status

*Notes:* Data are the 1991–2008 SIPP, followed monthly from the job-loss month. The figure plots the cumulative share of job-losing households that have changed residence in each of the 24 months after the loss, separately for households that did and did not miss a housing payment. The sample is restricted to households that (i) did not move in the four months before the job loss and (ii) whose job-losing member had been in the household for at least four months before the spell. Online Appendix Table A.15 drops restriction (i).

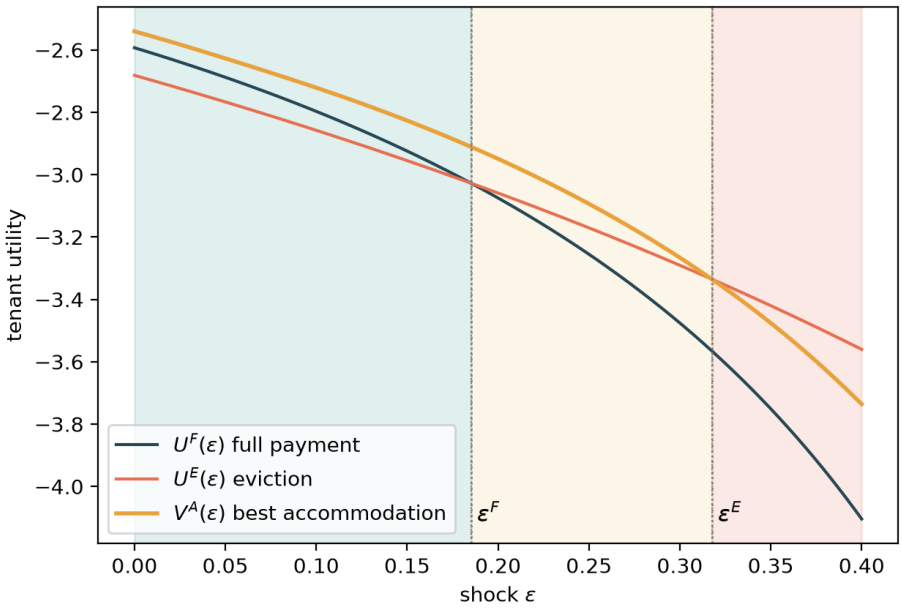



Figure 5: The fitted model: equilibrium regions

*Notes:* Tenant payoffs $U^F$, $U^E$, and $V^A$ over the shock $\varepsilon$ at the fitted parameters of Online Appendix Table C.1, with the full-payment, accommodation, and eviction regions shaded and the thresholds $\varepsilon^F$ and $\varepsilon^E$ marked. Fixed parameters: income $y = 1$ ($47,000 per year), rent $R = 0.248$, $\beta = 0.95$, $\rho = 2$, eviction cost $k_L = 0.072$ (3.5 months of rent), and eviction payoff $(1 + \beta)u(a - b\varepsilon)$ with $(a, b) = (0.727, 0.449)$. Fitted: $\theta = 0.43$, $m = 0.033$ (1.6 months of rent), and a Weibull shock distribution with shape 1.19 and scale 0.090, right-truncated to $[0, 0.40]$. The tenant pays in full where $U^F$ is highest, accepts the contract where $V^A$ is highest, and is evicted where $U^E$ is highest.

# Landlords as Lenders of Last Resort? Missed Housing Payments During Unemployment

*Online Appendices*

Nathaniel Pattison

## Online Appendix A. Tables and Figures

Table A.1: Robustness to the pre-period employment screen

| | Screen on | Screen relaxed |
|---|---|---|
| **Panel A: Survey of Income and Program Participation** | | |
| Any missed payment, all | 0.0785 (0.0056) | 0.0794 (0.0049) |
| Any missed payment, renters | 0.0932 (0.0098) | 0.0948 (0.0083) |
| Any missed payment, owners | 0.0643 (0.0069) | 0.0652 (0.0066) |
| Eviction, all | 0.0041 (0.0011) | 0.0041 (0.0012) |
| Households | 55,553 | 58,592 |
| **Panel B: RAND ALP Financial Crisis Surveys** | | |
| Two or more months behind | 0.0751 (0.0138) | 0.0739 (0.0133) |
| $\Delta$ Housing expenditure | −0.0483 (0.0139) | −0.0533 (0.0127) |
| $\Delta$ Nondurable expenditure | −0.0786 (0.0167) | −0.0829 (0.0154) |
| Household-quarters | 20,235 | 22,868 |

*Notes:* The pre-period employment screen requires that no household member was unemployed during the pre-period. It drops 3,039 SIPP households (5.2%) and 2,633 ALP household-quarters (11.5%). Each cell is the job-loss coefficient. The "screen on" column reproduces the paper's estimate. The "screen relaxed" column re-estimates the same specification on a sample that admits the dropped households, adding an indicator for pre-period unemployment as a control. In Panel A the missed-payment rows are column (3) of Table 2 and the eviction row applies that specification to an indicator for eviction. Standard errors are clustered by state. Panel B rows are columns (2), (3), and (5) of Table 3, with year-quarter fixed effects and heteroskedasticity-robust standard errors.

Table A.2: Summary statistics: renters vs. owners

| | Renters | | Owners | |
|---|---|---|---|---|
| | Mean | Median | Mean | Median |
| **Panel A: Survey of Income and Program Participation** | | | | |
| *Missed Payments and Eviction* | | | | |
| Unemp within household (%) | 10.3 | 0.0 | 7.0 | 0.0 |
| Missed housing payment (%) | 9.6 | 0.0 | 4.3 | 0.0 |
| Eviction in prior 12 months (%) | 0.4 | 0.0 | 0.1 | 0.0 |
| *Demographic Characteristics* | | | | |
| Homeowner (%) | 0.0 | 0.0 | 100.0 | 100.0 |
| Annual household income ($1,000s) | 57.1 | 47.0 | 99.4 | 83.7 |
| Age | 37.2 | 35.0 | 43.5 | 43.0 |
| Married (%) | 37.0 | 0.0 | 72.8 | 100.0 |
| Household size | 2.4 | 2.0 | 3.0 | 3.0 |
| Race: Black (%) | 14.1 | 0.0 | 6.9 | 0.0 |
| Ethnicity: Hispanic (%) | 13.2 | 0.0 | 5.9 | 0.0 |
| Educ.: Less Than HS (%) | 12.1 | 0.0 | 5.4 | 0.0 |
| Educ.: HS (%) | 24.9 | 0.0 | 22.5 | 0.0 |
| Educ.: Some College (%) | 34.2 | 0.0 | 33.5 | 0.0 |
| Educ.: College (%) | 18.9 | 0.0 | 23.5 | 0.0 |
| Educ.: Grad School (%) | 9.9 | 0.0 | 15.2 | 0.0 |
| *Financial Characteristics* | | | | |
| Liquid assets ($1,000s) | 12.0 | 0.8 | 48.9 | 5.6 |
| Liquid assets / monthly income | 2.4 | 0.2 | 6.1 | 0.8 |
| Has unsecured debt (%) | 62.3 | 100.0 | 72.0 | 100.0 |
| Unsecured debt ($1,000s) | 9.9 | 1.5 | 13.8 | 3.0 |
| Unsecured debt / monthly income | 3.7 | 0.3 | 2.8 | 0.4 |
| Housing costs ($1,000s) | 1.1 | 1.0 | 1.5 | 1.4 |
| Housing costs / income (%) | 42.6 | 24.8 | 29.2 | 20.1 |
| Observations | 17,473 | | 38,080 | |
| **Panel B: RAND ALP Financial Crisis Surveys** | | | | |
| *Post-period Characteristics* | | | | |
| Missed housing payment, 2+ months (%) | 3.0 | 0.0 | 1.9 | 0.0 |
| Eviction or foreclosure notice (%) | 0.4 | 0.0 | 1.0 | 0.0 |
| Moved (%) | 10.3 | 0.0 | 1.9 | 0.0 |
| Δ Housing expenditure (%) | 0.2 | -0.5 | -1.7 | -1.0 |
| Δ Utility expenditure (%) | 2.7 | -0.0 | 2.1 | 0.1 |
| Δ Bills (%) | 1.1 | 0.1 | -0.6 | -1.1 |
| Δ Nondurable expenditure (%) | 2.9 | -0.4 | 3.3 | 0.5 |
| Δ Total income (%) | 2.3 | 0.4 | 2.2 | 0.1 |
| *Pre-period Characteristics* | | | | |
| Homeowner (%) | 0.0 | 0.0 | 100.0 | 100.0 |
| Monthly household income ($1,000s) | 4.5 | 3.4 | 8.7 | 6.7 |
| Credit card debt ($1,000s) | 3.5 | 0.0 | 6.7 | 0.8 |
| Housing costs ($1,000s) | 0.9 | 0.8 | 1.3 | 1.1 |
| Housing costs / income (%) | 29.6 | 23.0 | 19.4 | 16.5 |
| Utility costs / income (%) | 10.3 | 7.3 | 7.8 | 6.4 |
| Bills / income (%) | 45.0 | 36.8 | 31.4 | 27.7 |
| Nondurable expenditure / income (%) | 25.2 | 19.7 | 18.1 | 16.1 |
| Observations | 5,211 | | 15,024 | |

*Notes:* Panel A is the 1991–2008 SIPP, one observation per household over the twelve-month payment-assessment period; Panel B is quarterly household-level observations from the RAND ALP, 2009–2016. Both panels cover the full sample of Table 1, split by tenure. Columns report means and medians separately for renters and for owners with a mortgage, measured in the pre-period. Dollar values are deflated to 2014$. The variable definitions, windows, and winsorizing match Table 1.

Table A.3: Missed housing payments by job loss and tenure

| | Job loss | No job loss |
|---|---|---|
| *Panel A: SIPP — any missed payment, 12-month window* | | |
| All | 15.0% | 5.2% |
| Renters | 20.2% | 8.4% |
| Owners (with mortgage) | 11.5% | 3.7% |
| *Panel B: ALP — two or more months behind, 6-month window* | | |
| All | 9.5% | 2.0% |
| Renters | 10.6% | 2.7% |
| Owners (with mortgage) | 8.9% | 1.8% |

*Notes:* Panel A is the 1991–2008 SIPP, one observation per household over the twelve-month payment-assessment period; Panel B is quarterly household-level observations from the RAND ALP, 2009–2016. Each cell is the share of households missing or behind on a housing payment, by job-loss status and tenure. The SIPP measures any missed payment over the twelve-month assessment window. The ALP measures being two or more months behind over quarters $t$ and $t+1$.

Table A.4: Missed payments and eviction by reason for job loss

| Reason for job loss | Job losses | Sh. missed payment | Sh. evicted | Evicted cond. missed |
|---|---|---|---|---|
| *Panel A: 1996, 2001, 2004 and 2008 panels* | | | | |
| On layoff†‡ | 824 | 14.1% | 0.2% | 1.7% |
| Employer bankrupt†‡ | 47 | 21.3% | 0.0% | 0.0% |
| Employer sold business†‡ | 52 | 9.6% | 0.0% | 0.0% |
| Discharged/fired† | 292 | 21.9% | 1.7% | 7.8% |
| Own illness† | 24 | 37.5% | 8.3% | 22.2% |
| Own injury† | 13 | 30.8% | 0.0% | 0.0% |
| Slack work or business conditions | 253 | 17.0% | 1.2% | 7.0% |
| Job was temporary and ended | 183 | 14.8% | 0.5% | 3.7% |
| Retirement or old age | 21 | 4.8% | 0.0% | 0.0% |
| Childcare problems | 14 | 42.9% | 7.1% | 16.7% |
| Other family/personal obligations | 36 | 13.9% | 0.0% | 0.0% |
| School/training | 73 | 8.2% | 0.0% | 0.0% |
| Quit to take another job | 189 | 14.3% | 0.0% | 0.0% |
| Unsatisfactory work arrangements | 226 | 15.0% | 0.0% | 0.0% |
| Quit for some other reason | 418 | 11.7% | 0.7% | 6.1% |
| Not reported | 785 | 14.8% | 0.9% | 6.0% |
| All job losses | 3,450 | 15.1% | 0.7% | 4.6% |
| *Panel B: 1991 and 1993 panels* | | | | |
| Laid off†‡ | 254 | 14.6% | 1.2% | 8.1% |
| Discharged† | 52 | 25.0% | 0.0% | 0.0% |
| Job was temporary and ended | 37 | 13.5% | 0.0% | 0.0% |
| Retired | 4 | 0.0% | 0.0% | – |
| Quit to take another job | 18 | 5.6% | 0.0% | 0.0% |
| Quit for some other reason | 130 | 15.4% | 0.8% | 5.0% |
| Not reported | 520 | 13.7% | 0.2% | 1.4% |
| All job losses | 1,015 | 14.5% | 0.5% | 3.4% |

*Notes:* Data are the 1991–2008 SIPP, one observation per household over the twelve-month payment-assessment period, restricted to households that lose a job. Rows are the reason given for the separation. Panel A uses the fifteen categories of the post-1996 era and Panel B the six categories of the earlier era. "Not reported" collects job losses for which no reason is recorded. Rows marked † are the reasons that meet the "Involuntary 1" definition and rows marked †‡ the narrower "Involuntary 2" definition. The marked rows account for 1,558 and 1,177 job losses respectively. "Job losses" counts households. "Sh. missed payment" and "Sh. evicted" are the shares missing a housing payment and evicted for nonpayment during the assessment period, and "Evicted cond. missed" is the share evicted among those who missed.

Table A.5: Robustness to the controls measured after the job loss

| | OLS (col. 3) | | | IPW | | |
|---|---|---|---|---|---|---|
| | with Δ | no Δ | no Δ, wealth pre-loss | with Δ | no Δ | no Δ, wealth pre-loss |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| **Panel A: Missed Housing Payment** | | | | | | |
| All | 0.078*** | 0.079*** | 0.075*** | 0.078*** | 0.078*** | 0.075*** |
| | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) |
| | [4,465] | [4,465] | [2,958] | [4,465] | [4,465] | [2,958] |
| Renters | 0.093*** | 0.094*** | 0.084*** | 0.094*** | 0.095*** | 0.085*** |
| | (0.010) | (0.010) | (0.013) | (0.011) | (0.011) | (0.014) |
| | [1,796] | [1,796] | [1,184] | [1,796] | [1,796] | [1,184] |
| Owners | 0.064*** | 0.064*** | 0.064*** | 0.064*** | 0.064*** | 0.064*** |
| | (0.007) | (0.007) | (0.008) | (0.007) | (0.007) | (0.008) |
| | [2,669] | [2,669] | [1,774] | [2,669] | [2,669] | [1,774] |
| **Panel B: Eviction for Nonpayment** | | | | | | |
| All | 0.004*** | 0.004*** | 0.002 | 0.004*** | 0.004*** | 0.002 |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| | [4,465] | [4,465] | [2,958] | [4,465] | [4,465] | [2,958] |
| Renters | 0.009*** | 0.009*** | 0.003 | 0.009*** | 0.009*** | 0.003 |
| | (0.003) | (0.003) | (0.003) | (0.003) | (0.003) | (0.003) |
| | [1,796] | [1,796] | [1,184] | [1,796] | [1,796] | [1,184] |
| Owners | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| | [2,669] | [2,669] | [1,774] | [2,669] | [2,669] | [1,774] |

*Notes:* Data are the 1991–2008 SIPP, one observation per household over the twelve-month payment-assessment period. Each cell is the job-loss coefficient from a separate regression, with the number of job losers in brackets. Panel A reports missed housing payments and Panel B eviction, each for all households, renters, and owners with a mortgage. Two sets of controls are not measured cleanly before the job loss. The change in household size and in marital status is measured over the outcome window. The financial controls come from the assets and liabilities module, whose interview follows the job loss for the 1991 panel and for part of the 1993, 2004, and 2008 panels. Columns (1) and (4) retain the change controls and reproduce columns (3) and (4) of Tables 2 and 5. Columns (2) and (5) drop them from the regression and from the propensity score respectively. Columns (3) and (6) additionally keep only the job losers whose wealth was measured before the job loss, leaving households without a job loss unrestricted, which leaves 13 of the 29 evictions that identify Panel B. Standard errors are clustered by state.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.6: Covariate balance before and after propensity-score weighting

| | All | | Renters | | Owners | |
|---|---|---|---|---|---|---|
| | Raw | Weighted | Raw | Weighted | Raw | Weighted |
| Age | -0.024 | 0.001 | -0.026 | 0.000 | 0.079 | 0.002 |
| HH income (pre, 000s) | -0.158 | -0.000 | -0.145 | -0.003 | -0.090 | 0.001 |
| Married | -0.035 | -0.002 | 0.084 | -0.007 | 0.004 | -0.000 |
| HH size | 0.265 | -0.010 | 0.338 | -0.018 | 0.293 | -0.008 |
| Black | 0.080 | 0.000 | 0.042 | 0.003 | 0.071 | -0.003 |
| Other nonwhite | 0.033 | 0.001 | 0.037 | -0.000 | 0.013 | 0.001 |
| Hispanic | 0.160 | 0.000 | 0.129 | -0.003 | 0.147 | 0.002 |
| Educ: HS dropout | 0.218 | -0.003 | 0.219 | -0.005 | 0.182 | -0.001 |
| Educ: HS graduate | 0.100 | -0.001 | 0.089 | 0.002 | 0.098 | -0.003 |
| Educ: Some college | 0.013 | 0.002 | -0.019 | 0.003 | 0.033 | 0.002 |
| Educ: Graduate school | -0.174 | -0.000 | -0.170 | -0.001 | -0.156 | 0.000 |
| Educ: College | -0.153 | 0.001 | -0.168 | -0.001 | -0.130 | 0.002 |
| Liquid assets (000s) | -0.040 | -0.000 | -0.070 | -0.001 | -0.036 | 0.000 |
| Net worth (000s) | -0.130 | -0.001 | -0.114 | -0.000 | -0.109 | -0.000 |
| Unsecured debt (000s) | 0.024 | -0.003 | -0.022 | -0.006 | 0.057 | -0.002 |
| Housing pay / mo. income | 0.005 | -0.000 | -0.005 | 0.000 | 0.011 | -0.001 |
| State unemp. rate | 0.194 | -0.003 | 0.188 | -0.003 | 0.189 | -0.001 |
| State max UI benefit | 0.050 | -0.002 | -0.010 | -0.002 | 0.089 | -0.001 |
| State log real GDP p.c. | -0.029 | -0.002 | -0.077 | -0.001 | -0.002 | -0.001 |
| State avg. wages | 0.059 | -0.003 | 0.011 | -0.003 | 0.088 | -0.002 |
| $\Delta$ HH size | 0.030 | 0.005 | 0.098 | 0.015 | -0.046 | 0.002 |
| $\Delta$ Married | -0.009 | -0.002 | -0.034 | -0.003 | -0.006 | -0.003 |

*Notes:* Data are the 1991–2008 SIPP, one observation per household over the twelve-month payment-assessment period, in the missed-payment estimation sample. Each cell is a standardized mean difference between households with and without a job loss, raw and after weighting non-losers by the odds of job loss from the propensity score of Table 2 columns (4) and (5). Binary and continuous covariates are standardized by the pooled unweighted standard deviation. Year and state indicators enter the propensity score but are omitted from the table.

Table A.7: Which controls move the job-loss coefficient

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| | Dependent Variable: Missed Housing Payment | | | | | | |
| **Panel A: All Respondents** | | | | | | | |
| Job loss | 0.096*** | 0.080*** | 0.092*** | 0.096*** | 0.096*** | 0.079*** | 0.078*** |
| | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) | (0.006) |
| Observations | 55,553 | 55,553 | 55,553 | 55,553 | 55,553 | 55,553 | 55,553 |
| **Panel B: Renters** | | | | | | | |
| Job loss | 0.117*** | 0.095*** | 0.115*** | 0.116*** | 0.116*** | 0.094*** | 0.093*** |
| | (0.011) | (0.010) | (0.011) | (0.011) | (0.011) | (0.010) | (0.010) |
| Observations | 17,473 | 17,473 | 17,473 | 17,473 | 17,473 | 17,473 | 17,473 |
| **Panel C: Owners with Mortgage** | | | | | | | |
| Job loss | 0.075*** | 0.066*** | 0.072*** | 0.075*** | 0.075*** | 0.065*** | 0.064*** |
| | (0.007) | (0.007) | (0.007) | (0.007) | (0.007) | (0.007) | (0.007) |
| Observations | 38,080 | 38,080 | 38,080 | 38,080 | 38,080 | 38,080 | 38,080 |
| *Controls* | | | | | | | |
| Demographic | | X | | | | X | X |
| Financial | | | X | | | X | X |
| State economic | | | | X | | | X |
| Year FE | X | X | X | X | X | X | X |
| State FE | | | | | X | | X |

*Notes:* Data and samples match Table 2, with the estimation sample held fixed across columns at households with non-missing values of every control; Panels A, B, and C report all households, renters, and owners with a mortgage. The control blocks are those of Section 3.1. Column (1) includes year fixed effects only. Columns (2) through (5) each add one block to that baseline and nothing else: the demographic controls in column (2), the financial controls in column (3), the state economic controls in column (4), and state fixed effects in column (5). Columns (6) and (7) are cumulative and reproduce columns (2) and (3) of Table 2. Column (6) adds the demographic and financial controls together, and column (7) adds the state economic controls and state fixed effects on top of them. Standard errors are clustered by state.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.8: Robustness to the definition of job loss and prior unemployment

| Sample: | Baseline | Exogenous job loss | No unemp. $t-1$ | Prior unemp. months |
|---|---|---|---|---|
| Model: | (1) | (2) | (3) | (4) |
| **Panel A: Missed housing payment** | | | | |
| All | 0.078*** | 0.081*** | 0.079*** | 0.074*** |
| | (0.006) | (0.006) | (0.007) | (0.006) |
| Observations | 55,553 | 53,906 | 50,041 | 55,553 |
| Renters | 0.093*** | 0.099*** | 0.088*** | 0.087*** |
| | (0.010) | (0.011) | (0.010) | (0.010) |
| Observations | 17,473 | 16,798 | 15,145 | 17,473 |
| Owners | 0.064*** | 0.065*** | 0.070*** | 0.062*** |
| | (0.007) | (0.008) | (0.010) | (0.007) |
| Observations | 38,080 | 37,108 | 34,896 | 38,080 |
| **Panel B: Evicted for nonpayment** | | | | |
| All | 0.0041*** | 0.0040*** | 0.0020 | 0.0035*** |
| | (0.0011) | (0.0013) | (0.0013) | (0.0011) |
| Observations | 55,543 | 53,896 | 50,032 | 55,543 |
| Renters | 0.0088*** | 0.0090*** | 0.0034 | 0.0077*** |
| | (0.0027) | (0.0032) | (0.0028) | (0.0026) |
| Observations | 17,470 | 16,795 | 15,142 | 17,470 |
| Owners | 0.0006 | 0.0005 | 0.0011 | 0.0004 |
| | (0.0010) | (0.0013) | (0.0015) | (0.0010) |
| Observations | 38,073 | 37,101 | 34,890 | 38,073 |
| *Controls* | | | | |
| Demographic | Yes | Yes | Yes | Yes |
| Financial | Yes | Yes | Yes | Yes |
| State Economic | Yes | Yes | Yes | Yes |
| Prior unemployment months | | | | Yes |
| *Fixed-effects* | | | | |
| Year | Yes | Yes | Yes | Yes |
| State | Yes | Yes | Yes | Yes |

*Notes:* Data are the 1991–2008 SIPP, one observation per household over the twelve-month payment-assessment period. Each cell is the job-loss coefficient from a separate regression; Panel A reports missed housing payments and Panel B eviction for non-payment, each for all households, renters, and owners with a mortgage. Every column includes the demographic, financial, and state economic controls of Table 2 column (3) with year and state fixed effects, and column (1) reproduces the baseline estimates of Tables 2 and 5. Column (2) keeps only job losers who received unemployment insurance during the spell or gave one of the "Involuntary 1" reasons of Section 3.1. Column (3) adds the requirement that no household member was unemployed in the full year before the assessment period. Column (4) returns to the full sample and adds a control for the number of months household members spent unemployed during the twelve months preceding the assessment period. Standard errors are clustered by state.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.9: Bias-adjusted treatment effect estimates

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Baseline Estimate | $R^2_{\texttt{max}} = 1.3\widetilde{R}^2$ | $R^2_{\texttt{max}} = 1.5\widetilde{R}^2$ | $R^2_{\texttt{max}} = 2\widetilde{R}^2$ |
| **Panel A: Missed Housing Payment** | | | | |
| All | 0.078 | 0.071 | 0.065 | 0.052 |
| Renters | 0.093 | 0.083 | 0.076 | 0.059 |
| Owners | 0.064 | 0.059 | 0.056 | 0.047 |
| **Panel B: Evicted for Nonpayment** | | | | |
| All | 0.004 | 0.004 | 0.004 | 0.003 |
| Renters | 0.009 | 0.008 | 0.008 | 0.007 |
| Owners | 0.001 | 0.001 | 0.000 | 0.000 |
| **Panel C: Moved within 12 Months of Job Loss** | | | | |
| All | 0.035 | 0.027 | 0.021 | 0.005 |
| Renters | 0.026 | 0.039 | 0.047 | 0.071 |
| Owners | 0.046 | 0.046 | 0.046 | 0.045 |

*Notes:* Data are the 1991–2008 SIPP, one observation per household over the twelve-month payment-assessment period. Each cell is a point estimate. Panel A takes the effect of job loss on missed housing payments from Table 2, Panel B the effect of job loss on eviction for nonpayment from Table 5, and Panel C the effect of a missed payment on moving from Table 6, each for all households, renters, and owners with a mortgage. Column (1) is the unadjusted estimate from column (3) of the corresponding table. Columns (2) to (4) report the bias-adjusted estimate of Oster (2019) under proportional selection ($\delta = 1$). They differ in the assumed explanatory power of a regression on all relevant controls, $R^2_{\texttt{max}}$, set to 1.3, 1.5, and 2 times $\widetilde{R}^2$, the R-squared of the fully controlled regression. The first is the value recommended by Oster (2019).

Table A.10: Changes in housing and nondurable expenditure after job loss: robustness

| | (1) Baseline (%) | (2) Balanced panel (%) | (3) $\log(x+1)$ | (4) Monthly data (%) | (5) Dollars ($) |
|---|---|---|---|---|---|
| **Panel A: Housing payments** | | | | | |
| All | $-0.048^{***}$ | $-0.054^{***}$ | $-0.057^{***}$ | $-0.067^{***}$ | $-46.4^{***}$ |
| | (0.014) | (0.014) | (0.015) | (0.017) | (14.2) |
| Renters | $-0.075^{***}$ | $-0.065^{***}$ | $-0.091^{***}$ | $-0.116^{***}$ | $-63.6^{***}$ |
| | (0.025) | (0.024) | (0.027) | (0.033) | (22.5) |
| Owners | $-0.036^{**}$ | $-0.051^{***}$ | $-0.040^{**}$ | $-0.045^{**}$ | $-40.7^{**}$ |
| | (0.016) | (0.017) | (0.017) | (0.020) | (18.2) |
| **Panel B: Nondurable expenditure** | | | | | |
| All | $-0.079^{***}$ | $-0.072^{***}$ | $-0.095^{***}$ | $-0.126^{***}$ | $-80.3^{***}$ |
| | (0.017) | (0.019) | (0.017) | (0.019) | (16.7) |
| Renters | $-0.072^{**}$ | $-0.075^{**}$ | $-0.089^{***}$ | $-0.140^{***}$ | $-57.4^{**}$ |
| | (0.031) | (0.036) | (0.033) | (0.039) | (24.9) |
| Owners | $-0.083^{***}$ | $-0.072^{***}$ | $-0.098^{***}$ | $-0.120^{***}$ | $-93.2^{***}$ |
| | (0.019) | (0.022) | (0.020) | (0.022) | (22.0) |
| *N spells* | | | | | |
| All | 452 | 299 | 452 | 297 | 452 |
| Renters | 170 | 95 | 170 | 93 | 170 |
| Owners | 282 | 204 | 282 | 204 | 282 |

*Notes:* Data are quarterly household-level observations from the RAND ALP, 2009–2016, except in column (4). Each cell is the job-loss coefficient from a separate regression; Panel A reports the change in the monthly housing payment and Panel B the change in monthly nondurable expenditure, each for all households, renters, and owners. All specifications include year-quarter (or year-month) fixed effects. Column (1) is the baseline of Table 3: the percentage change between the pre-period, quarters $t-3$ through $t-1$, and the post-period, quarters $t$ and $t+1$, winsorized at $\pm 100\%$. Column (2) restricts the sample to respondents with no missing observations in quarters $t-3$ to $t+1$. Column (3) replaces the dependent variable with the change in $\log(x+1)$ between the post- and pre-period. Column (4) uses the monthly ALP data, with a pre-period of months $t-6$ through $t-1$ and a post-period of months $t$ and $t+1$. Column (5) replaces the dependent variable with the change in dollars of monthly expenditure. Heteroskedasticity-robust standard errors are in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.11: Difference and equivalence tests for renter-owner comparisons (ALP)

| | Renters | Owners | Difference | (SE) | 90% CI | Diff. $p$ |
|---|---|---|---|---|---|---|
| $\Delta$ income | -0.294 | -0.246 | 0.047 | (0.039) | [-0.017, 0.112] | 0.227 |
| $\Delta$ behind on housing | 0.079 | 0.069 | -0.010 | (0.029) | [-0.057, 0.038] | 0.739 |
| $\Delta$ housing expenditure | -0.075 | -0.036 | 0.039 | (0.030) | [-0.011, 0.088] | 0.198 |
| $\Delta$ bill expenditure | -0.065 | -0.033 | 0.032 | (0.028) | [-0.015, 0.079] | 0.258 |
| $\Delta$ nondurable expenditure | -0.072 | -0.083 | -0.012 | (0.036) | [-0.071, 0.048] | 0.750 |

*Notes:* Data are quarterly household-level observations from the RAND ALP, 2009–2016. Rows are the five ALP job-loss outcomes: the change in household income, in being behind on housing, and in housing, bill, and nondurable expenditure, each measured as in Table 3. The Renters and Owners columns report the job-loss coefficient estimated separately by tenure. "Difference" is the owner estimate minus the renter estimate, reported with its standard error, its 90% confidence interval, and the $p$-value of the test that it is zero.

Table A.12: Within-household co-movement of expenditure changes after job loss

| | Job losers | Non-losers |
|---|---|---|
| *Housing payment vs. nondurable spending* | | |
| Raw correlation | 0.30 | 0.12 |
| Conditional on the income change | 0.26 | 0.11 |
| *Food vs. other nondurable spending* | | |
| Raw correlation | 0.28 | 0.24 |
| Conditional on the income change | 0.26 | 0.23 |

*Notes:* Data are quarterly household-level observations from the RAND ALP, 2009–2016, restricted to households that do not move. Each cell reports the Pearson correlation between the percentage changes in the two spending categories named in the panel heading, each measured as in Section 3.2. Other nondurable spending is nondurable spending less food. Conditional rows control for the percentage change in household income and year-quarter fixed effects.

Table A.13: Impact of a missed payment on evictions

| | Dependent Variable: Evicted | | | | | |
|---|---|---|---|---|---|---|
| Model: | (1) | (2) | (3) | (4) | (5) | (6) |
| **Panel A: All Respondents** | | | | | | |
| Missed Payment | 0.043*** | 0.043*** | 0.043*** | 0.043*** | 0.045*** | 0.031** |
| | (0.008) | (0.008) | (0.008) | (0.008) | (0.012) | (0.013) |
| Observations | 4,382 | 4,382 | 4,379 | 4,379 | 1,536 | 1,163 |
| $R^2$ | 0.03763 | 0.04016 | 0.05284 | 0.05422 | 0.09040 | 0.06193 |
| **Panel B: Renters** | | | | | | |
| Missed Payment | 0.066*** | 0.067*** | 0.067*** | 0.066*** | 0.066*** | 0.039** |
| | (0.013) | (0.013) | (0.013) | (0.013) | (0.018) | (0.019) |
| Observations | 1,763 | 1,763 | 1,761 | 1,761 | 586 | 420 |
| $R^2$ | 0.05549 | 0.06215 | 0.09752 | 0.09973 | 0.15661 | 0.10067 |
| **Panel C: Owners** | | | | | | |
| Missed Payment | 0.016** | 0.015** | 0.016* | 0.016* | 0.024 | 0.027 |
| | (0.008) | (0.008) | (0.008) | (0.008) | (0.016) | (0.017) |
| Observations | 2,619 | 2,619 | 2,618 | 2,618 | 944 | 735 |
| $R^2$ | 0.01509 | 0.02114 | 0.04026 | 0.04320 | 0.09394 | 0.07666 |
| *Sample Restriction* | | | | | Invol. 1 | Invol 2. |
| *Controls* | | | | | | |
| Demographic | | X | X | X | X | X |
| Financial | | X | X | X | X | X |
| State Economic | | | | X | X | X |
| *Fixed-effects* | | | | | | |
| Year | X | X | X | X | X | X |
| State | | | X | X | X | X |

*Notes:* Data are the 1991–2008 SIPP, one observation per household over the twelve-month payment-assessment period, restricted to households that experienced a job loss. Owners are owners with a mortgage. Columns (1) to (4) add in turn year fixed effects, the demographic and financial controls of Table 2, state fixed effects, and the state economic controls. Columns (5) and (6) repeat column (4) on the Involuntary 1 and Involuntary 2 job losses of Section 3.1. Standard errors are clustered by state. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.14: Eviction conditional on missing among renters with little room to choose

**Panel A: Probability of missing a housing payment**

| | N (in group) | N (others) | P(missed), group | P(missed), others | Difference (s.e.) |
|---|---|---|---|---|---|
| All job-losing renters | 1763 | | 0.204 | | |
| Liquid assets $<$ 1 month housing payment | 1123 | 640 | 0.249 | 0.125 | 0.068*** (0.020) |
| No liquid assets | 596 | 1167 | 0.270 | 0.171 | 0.045* (0.023) |
| Housing payment / income above median | 882 | 881 | 0.245 | 0.163 | 0.028 (0.030) |
| Housing payment $\geq$ 50% of income | 304 | 1459 | 0.322 | 0.180 | 0.099*** (0.024) |
| Unemployment spell $>$ 3 months | 756 | 617 | 0.222 | 0.159 | 0.046** (0.020) |
| Income loss larger than median | 882 | 881 | 0.236 | 0.173 | 0.094*** (0.022) |

**Panel B: Eviction conditional on missing**

| | N missed (in group) | P(evict \| miss), group | P(evict \| miss), others | Within-group coef. | Interaction coef. |
|---|---|---|---|---|---|
| All job-losing renters | 360 | 0.067 | | 0.066*** (0.014) | |
| Liquid assets $<$ 1 month housing payment | 280 | 0.064 | 0.075 | 0.065*** (0.014) | -0.004 (0.030) |
| No liquid assets | 161 | 0.068 | 0.065 | 0.071*** (0.017) | 0.005 (0.021) |
| Housing payment / income above median | 216 | 0.056 | 0.083 | 0.055*** (0.013) | -0.024 (0.026) |
| Housing payment $\geq$ 50% of income | 98 | 0.092 | 0.057 | 0.101*** (0.031) | 0.039 (0.029) |
| Unemployment spell $>$ 3 months | 168 | 0.083 | 0.041 | 0.081*** (0.023) | 0.037 (0.029) |
| Income loss larger than median | 208 | 0.058 | 0.079 | 0.060*** (0.017) | -0.017 (0.024) |

*Notes:* Data are the 1991–2008 SIPP. The sample is the job-losing renters of Online Appendix Table A.13. Each row splits the sample by an indicator that missing was unlikely to be a choice: low or no liquid assets, a high housing-payment burden, a long unemployment spell, or a large realized income loss. "Income loss larger than median" marks the households whose proportional change in household income across the job loss falls at or below the sample median. Panel A reports the raw share missing a housing payment inside and outside each group, with "Difference" the coefficient on the group indicator in a regression of missing on that indicator. Panel B conditions on missing. "P(evict | miss)" is the share of missers in (out of) the group who report an eviction, "Within-group coef." is the missed-payment coefficient from the eviction regression of Online Appendix Table A.13 estimated within the group, and "Interaction" is the coefficient on missed payment $\times$ group indicator in the pooled sample. All regressions include the demographic, financial, and state economic controls with year and state fixed effects. Standard errors are clustered by state. The control that defines a split is dropped from that row's regressions.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.15: Impact of a missed payment on moving out, including prior moves

| | Dependent Variable: Moved within 12 Months of Job Loss | | | | | |
|---|---|---|---|---|---|---|
| Model: | (1) | (2) | (3) | (4) | (5) | (6) |
| **Panel A: All Respondents** | | | | | | |
| Missed Payment | 0.061*** | 0.024 | 0.024 | 0.025 | -0.016 | -0.040 |
| | (0.019) | (0.019) | (0.018) | (0.018) | (0.049) | (0.048) |
| Observations | 3,511 | 3,511 | 3,509 | 3,509 | 1,188 | 878 |
| $R^2$ | 0.00464 | 0.12459 | 0.14631 | 0.14891 | 0.15401 | 0.19954 |
| **Panel B: Renters** | | | | | | |
| Missed Payment | -0.032 | 0.0005 | 0.008 | 0.007 | -0.054 | -0.105 |
| | (0.029) | (0.028) | (0.028) | (0.028) | (0.070) | (0.077) |
| Observations | 1,404 | 1,404 | 1,403 | 1,403 | 462 | 325 |
| $R^2$ | 0.00263 | 0.08719 | 0.13787 | 0.14846 | 0.20548 | 0.30882 |
| **Panel C: Owners** | | | | | | |
| Missed Payment | 0.040* | 0.037* | 0.034* | 0.037* | 0.008 | 0.0001 |
| | (0.022) | (0.022) | (0.020) | (0.020) | (0.033) | (0.037) |
| Observations | 2,107 | 2,107 | 2,106 | 2,106 | 723 | 547 |
| $R^2$ | 0.00577 | 0.04231 | 0.07802 | 0.08019 | 0.09279 | 0.15742 |
| *Sample Restriction* | | | | | Invol. 1 | Invol 2. |
| *Controls* | | | | | | |
| Demographic | | X | X | X | X | X |
| Financial | | X | X | X | X | X |
| State Economic | | | | X | X | X |
| *Fixed-effects* | | | | | | |
| Year | X | X | X | X | X | X |
| State | | | X | X | X | X |

*Notes:* Data are the 1991–2008 SIPP, one observation per household over the twelve-month payment-assessment period, restricted to households that experienced a job loss and are observed for at least twelve months after it. Owners are owners with a mortgage. The columns match Online Appendix Table A.13. Relative to Table 6, the sample retains households that had already moved in the four months before the job loss, and those households count as movers. Standard errors are clustered by state.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.16: Moving within twelve months: job loss, missed payments, and their interaction

| | (1) | (2) | (3) |
|---|---|---|---|
| | Moved within 12 Months | | |
| *Sample* | Job losers | All | All |
| **Panel A: All Respondents** | | | |
| Job loss | | 0.044*** | 0.043*** |
| | | (0.006) | (0.005) |
| Missed payment | 0.036* | 0.023*** | 0.022*** |
| | (0.019) | (0.007) | (0.007) |
| Job loss × Missed payment | | | 0.011 |
| | | | (0.018) |
| Mean of Dep. Var | 0.141 | 0.104 | 0.104 |
| Observations | 2,745 | 47,510 | 47,510 |
| **Panel B: Renters** | | | |
| Job loss | | 0.048*** | 0.043*** |
| | | (0.014) | (0.014) |
| Missed payment | 0.046 | −0.005 | −0.009 |
| | (0.035) | (0.015) | (0.016) |
| Job loss × Missed payment | | | 0.025 |
| | | | (0.037) |
| Mean of Dep. Var | 0.296 | 0.258 | 0.258 |
| Observations | 896 | 12,893 | 12,893 |
| **Panel C: Owners with Mortgage** | | | |
| Job loss | | 0.027*** | 0.027*** |
| | | (0.006) | (0.005) |
| Missed payment | 0.016 | 0.016** | 0.016** |
| | (0.019) | (0.007) | (0.007) |
| Job loss × Missed payment | | | −0.003 |
| | | | (0.020) |
| Mean of Dep. Var | 0.066 | 0.046 | 0.046 |
| Observations | 1,845 | 34,617 | 34,617 |
| *Controls* | | | |
| Demographic & Financial | X | X | X |
| State Economic | X | X | X |
| Year FE | X | X | X |
| State FE | X | X | X |

*Notes:* Data are the 1991–2008 SIPP, one observation per household, covering households with and without a job loss. Households with a job loss during the missed-payment reference year are anchored at the job-loss month and households without one at the start of that year, and the outcome indicates any move within twelve months of the anchor. A move in the anchor month counts. The sample drops households that moved or had unemployment in the six months before the anchor, that live in public or government-subsidized housing, or that are not observed for twelve months after the anchor. Column (1) estimates the missed-payment association within job losers, the analog of Table 6. Columns (2) and (3) use the full sample. All columns include the Table 2 controls with year and state fixed effects, and standard errors are clustered by state.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.17: What movers move into: destination conditions and housing payments, by missed-payment status

**Panel A: Destination conditions of movers, by missed-payment status**

| | No miss | Missed | Stayer mean |
|---|---|---|---|
| Number of rooms | 5.31 | 4.74 | 4.67 |
| Rooms per person | 2.47 | 1.93 | 1.94 |
| Housing problems (of 7) | 0.16 | 0.44 | 0.47 |
| Neighborhood problems (of 6) | 0.49 | 0.88 | 0.89 |
| Dissatisfied with home | 0.04 | 0.03 | 0.11 |
| Dissatisfied with neighborhood | 0.04 | 0.12 | 0.10 |
| Neighborhood unsafe | 0.11 | 0.15 | 0.17 |
| Movers: 194 (34 missed payments). | | | |

**Panel B: Housing payment and household changes across the move window**

| | N | Share to $0 | Share no longer head | Mean Δ HH size |
|---|---|---|---|---|
| Stayed, no miss | 262 | 0.05 | 0.02 | 0.02 |
| Stayed, missed | 72 | 0.01 | 0.00 | -0.08 |
| Moved, no miss | 96 | 0.20 | 0.15 | 0.11 |
| Moved, missed | 33 | 0.33 | 0.18 | 0.09 |

*Notes:* Data are the 1991–2008 SIPP, restricted to the job-losing renters of Table 6. Panel A reports living conditions recorded in the SIPP Adult Well-Being modules (1996–2008 panels) at the interview, which for households that moved during the missed-payment reference year describe the destination. "Stayer mean" reports the same conditions for non-movers. "Housing problems (of 7)" counts reported problems with the home: pests, a leaking roof, broken windows, exposed electrical wires, plumbing that does not work, holes or cracks in the walls or ceiling, and holes in the floor. "Neighborhood problems (of 6)" counts reported neighborhood conditions: street noise, streets in need of repair, trash or litter, abandoned buildings, industries or businesses, and odors or fumes. Panel B reports changes between the assets-module waves bracketing the missed-payment year, roughly twelve months apart. "Share to $0" is the share whose monthly housing payment falls to zero. "Share no longer head" is the share who were their household's reference person at the first of the two interviews but not at the second. "Mean Δ HH size" is the mean change in the number of household members over the same window.

Table A.18: Reasons for moving in the ALP, and the moves of renters who fall behind

| *Panel A. Share of moves citing each reason* | | | | |
|---|---|---|---|---|
| Reason for move | All moves | Renters | Behind | Never behind |
| Evicted from residence | 0.02 | 0.03 | 0.15 | 0.02 |
| Could no longer afford mortgage or rent | 0.11 | 0.09 | 0.32 | 0.08 |
| Wanted lower rent or maintenance | 0.11 | 0.11 | 0.21 | 0.11 |
| Lost home to foreclosure | 0.02 | 0.01 | 0.02 | 0.01 |
| *Forced or affordability-pushed (any of the above)* | 0.21 | 0.20 | 0.47 | 0.18 |
| Closer to work/school/other location | 0.17 | 0.18 | 0.11 | 0.19 |
| To establish own household | 0.17 | 0.22 | 0.13 | 0.22 |
| Relocated due to new job | 0.12 | 0.12 | 0.04 | 0.11 |
| Family reasons | 0.26 | 0.23 | 0.19 | 0.23 |
| Spend retirement years elsewhere | 0.05 | 0.02 | 0.02 | 0.02 |
| Could afford/wanted a bigger home | 0.15 | 0.16 | 0.15 | 0.17 |
| Wanted a smaller house or apartment | 0.06 | 0.04 | 0.04 | 0.04 |
| Disaster loss (fire, flood, etc.) | 0.01 | 0.01 | 0.02 | 0.01 |
| Other | 0.25 | 0.26 | 0.23 | 0.27 |
| Number of moves | 1749 | 997 | 47 | 761 |
| Number of renters | 1103 | 656 | 40 | 482 |

| *Panel B. Behind renters over the 24 months after first falling behind* | | |
|---|---|---|
| | Renters | Share |
| Behind renters at risk | 94 | |
| Moved | 40 | 0.43 |
| Eviction given as a reason | 6 | 0.06 |
| Affordability reason, no eviction | 13 | 0.14 |
| *Any forced or affordability reason* | 19 | 0.20 |

*Notes:* Moves since October 2008 reported in the ALP move modules, with the check-all-that-apply question "What prompted that move?" Panel A reports the share of moves citing each reason. Shares within a column need not sum to one. The columns are all reported moves, all moves by renters, moves made by renters within two years *after* they first fell at least two months behind on housing, and moves by renters observed never to fall behind. "Behind" is the indicator for being at least two months behind. The four affordability and forced-move reasons appear above the rule. Their combined measure, "Forced or affordability-pushed," is the share of moves citing any of the eviction, foreclosure, "could no longer afford," or "wanted lower rent or maintenance" category. "Number of renters" counts the distinct renters making the moves in a column. Panel B reports the share of behind renters, the base for the shares given in the text. Its population is the renters who fall at least two months behind and are then observed through the full two years or move within them. A renter enters a row once, whatever the number of moves, and the reason categories overlap. "Affordability reason, no eviction" is the "could no longer afford" or "wanted lower rent or maintenance" category on a move citing no eviction.

Table A.19: Repayment in the year after a missed housing payment

| | Missed payment defined as paying | | |
|---|---|---|---|
| | nothing | 50% or less | 75% or less |
| **Panel A: All job losers** | | | |
| Households reaching the miss (of 253) | 48 | 57 | 79 |
| Months observed in the next 12 | 314 | 392 | 599 |
| Median months observed per household | 6 | 7 | 8 |
| Months with another miss (%) | 32 | 37 | 49 |
| Months with a catch-up payment (%) | 16 | 14 | 10 |
| Households making any catch-up payment (%) | 28 | 27 | 23 |
| **Panel B: Renters** | | | |
| Households reaching the miss (of 81) | 14 | 19 | 24 |
| Months observed in the next 12 | 79 | 114 | 154 |
| Median months observed per household | 6 | 6 | 6 |
| Months with another miss (%) | 20 | 40 | 58 |
| Months with a catch-up payment (%) | 18 | 13 | 10 |
| Households making any catch-up payment (%) | 23 | 22 | 22 |

*Notes:* Data are the monthly RAND ALP, November 2009–April 2013, with follow-up payments continuing in the quarterly ALP thereafter. The sample is job losers whose housing payment falls to the column's threshold or below in the job-loss month or one of the following eight months, dated from that month. The window is the twelve months after the miss. Each column defines a missed payment by its own threshold and uses the same threshold when defining another miss. Payments are compared with the household's average monthly payment over the six months before job loss, held fixed. The follow-up uses monthly readings while the monthly module runs and one reading per quarter afterwards, each of which is a single month's payment. A catch-up payment is more than 10% above the baseline. Payments are censored at the first observed post-job-loss move.

Table A.20: Rent arrears and repayment among renters in the SHED, 2021–2025

| | $N$ | All renters | Job loss | No job loss |
|---|---|---|---|---|
| **Panel A: behind on rent in the past year (%)** | | | | |
| 2021 | 2,894 | 17.2 | 38.4 | 14.9 |
| 2023 | 2,896 | 19.5 | 42.8 | 17.1 |
| 2025 | 3,426 | 22.9 | 49.2 | 19.3 |
| **Panel B: among renters behind in the past year (2021–2022 waves)** | | | | |
| Still owe back rent or fees (%) | 923 | 45.1 | 51.3 | 43.3 |
| Amount still owed, mean ($) | 406 | 1,968 | 2,302 | 1,856 |
| Amount still owed, median ($) | 406 | 1,200 | 1,476 | 1,200 |
| Amount still owed, 75th percentile ($) | 406 | 2,500 | 2,986 | 2,264 |
| In months of rent, mean | 397 | 2.5 | 2.7 | 2.4 |
| In months of rent, median | 397 | 1.7 | 2.2 | 1.6 |
| In months of rent, 75th percentile | 397 | 3.0 | 3.4 | 2.7 |
| Applied for rental assistance, 2021 (%) | 467 | 35.7 | 47.5 | 32.3 |
| Of applicants, received assistance, 2021 (%) | 167 | 38.2 | 30.4 | 41.6 |

*Notes:* Data are renter households in the Federal Reserve SHED, 2021–2025. Shares and amounts are population-weighted. $N$ is the unweighted cell count. Panel A reports the share of renters behind on rent at any point in the prior twelve months, by survey wave and by past-year job loss. Panel B restricts to renters behind in the past year in the 2021 and 2022 waves, the only waves that ask whether back rent or fees are still owed and how much. Amounts are among renters with a recorded balance, in dollars and scaled by the household's own monthly rent, and the assistance rows cover the 2021 wave only. Monthly rent is recorded as a bracket in the 2021 wave, so bracketed rents are assigned their interval midpoint, with the open-ended top bracket ($2,000 or above) set to $2,250. The months-of-rent rows drop renters with a zero balance or no usable rent.

Table A.21: Credit characteristics by difficulty making payments

| | Renter | | | Owner | | |
|---|---|---|---|---|---|---|
| Payment Difficulty Type: | Housing | Other | None | Housing | Other | None |
| **Liquidity** | | | | | | |
| Without main income source, can cover expenses for <2 weeks | 40.3 | 57.4 | 13.4 | 43.0 | 22.5 | 6.0 |
| Checking balance <$100 | 48.0 | 43.5 | 14.5 | 26.7 | 21.9 | 2.7 |
| Checking balance $100–$500 | 18.2 | 26.4 | 7.0 | 24.8 | 15.1 | 4.3 |
| Could pay none of unexpected $2k expense | 50.3 | 48.8 | 10.3 | 43.8 | 29.3 | 3.5 |
| Could pay some but less than half of unexpected $2k expense | 37.8 | 36.2 | 29.9 | 30.6 | 36.7 | 14.9 |
| Has checking account | 87.3 | 87.9 | 95.0 | 93.6 | 92.9 | 99.7 |
| Has any credit card (self-reported) | 55.0 | 51.8 | 85.7 | 79.1 | 76.8 | 91.5 |
| Has open credit card (credit report) | 55.9 | 51.7 | 86.3 | 74.8 | 77.3 | 88.8 |
| Owns stocks / mutual funds | 6.2 | 9.7 | 28.1 | 9.1 | 21.0 | 49.9 |
| Credit card utilization ratio | 53.0 | 54.9 | 29.2 | 50.9 | 35.8 | 19.4 |
| VantageScore credit score | 589.9 | 598.3 | 699.7 | 651.2 | 662.8 | 748.3 |
| Applied for loan in last year | 55.2 | 49.2 | 38.1 | 53.0 | 51.7 | 37.4 |
| Denied loan or credit application | 71.4 | 52.1 | 37.6 | 55.0 | 35.4 | 6.1 |
| Discouraged from applying for credit | 62.3 | 51.1 | 15.9 | 39.2 | 34.3 | 4.8 |
| **Negative credit events in last year** | | | | | | |
| Any overdraft or declined transaction | 61.6 | 51.1 | 19.8 | 48.3 | 43.5 | 8.7 |
| Any account 90+ days past due | 42.8 | 45.6 | 8.1 | 34.3 | 25.9 | 1.6 |
| Credit limit reduced | 15.6 | 15.4 | 5.5 | 14.0 | 14.4 | 2.1 |
| Number of bill difficulties | 3.2 | 1.6 | 0.0 | 3.4 | 1.6 | 0.0 |
| **Response to difficulty** | | | | | | |
| Didn't pay this bill | 35.8 | 26.4 | – | 30.1 | 29.6 | – |
| Delayed or negotiated payment | 34.7 | 19.5 | – | 29.1 | 21.4 | – |
| Skipped or paid another bill late | 45.3 | 27.5 | – | 42.1 | 25.5 | – |
| Cut back on other expenses | 48.0 | 45.3 | – | 51.2 | 43.7 | – |
| Increased income | 18.3 | 5.0 | – | 14.2 | 11.2 | – |
| Borrowed from family or friends | 36.5 | 26.0 | – | 28.9 | 13.6 | – |
| Used savings | 13.5 | 21.0 | – | 45.8 | 27.8 | – |
| Loan from bank or credit union | 3.2 | 2.2 | – | 7.1 | 5.1 | – |
| Used credit card | 25.4 | 23.5 | – | 34.4 | 29.0 | – |
| Borrowed HELOC | 0.0 | 0.0 | – | 6.7 | 3.7 | – |
| Withdrew from retirement account | 5.3 | 6.1 | – | 5.8 | 2.1 | – |
| Borrowed from non-traditional lender | 21.5 | 9.7 | – | 12.2 | 7.4 | – |
| **Sample observations** | | | | | | |
| Number of observations | 141 | 168 | 211 | 147 | 415 | 1421 |

*Notes:* Data are the 2022 CFPB Making Ends Meet Survey, Wave 1 (2019) (Consumer Financial Protection Bureau, 2022). Each cell reports the weighted mean of the indicated variable within renter–owner and difficulty-status groups. Difficulty status is reporting difficulty paying a housing bill, difficulty paying other bills but not housing, or no payment difficulties. The housing group includes everyone reporting housing-payment difficulty, many of whom also reported difficulties with other bills. Bill types include housing, utilities, food, regular household expenses, home or car repairs, medical expenses, and other major expenses. Credit utilization, credit score, and credit-card ownership are as of June 2019. Denied loan is conditional on having applied for credit, and card utilization is conditional on having a credit card. Missing observations are dropped variable by variable, and the share missing ranges from 0 to 6.5%. Dashes (–) indicate missing values. All variables are expressed in percentages except VantageScore and the number of bill difficulties.

Table A.22: Dollar changes in spending per dollar change in income after job loss (ALP renters)

| | Housing | Nondurables | Bills |
|---|---|---|---|
| | (1) | (2) | (3) |
| $\Delta$ Income ($) | 0.047** | 0.053*** | 0.062*** |
| | (0.019) | (0.019) | (0.023) |
| Observations | 126 | 126 | 126 |

*Notes:* Data are quarterly household-level observations from the RAND ALP, 2009–2016, restricted to job-losing renters who do not move. Each cell reports the coefficient from a separate regression of the dollar change in the indicated expenditure category, post-job-loss quarters $t$ and $t+1$ against pre-job-loss quarters $t-3$ to $t-1$ in \$/month, on the dollar change in household income over the same windows. A positive coefficient means the category falls as income falls. All regressions include year-quarter fixed effects, and dollar changes are winsorized at the 1st and 99th percentiles. Heteroskedasticity-robust standard errors are in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

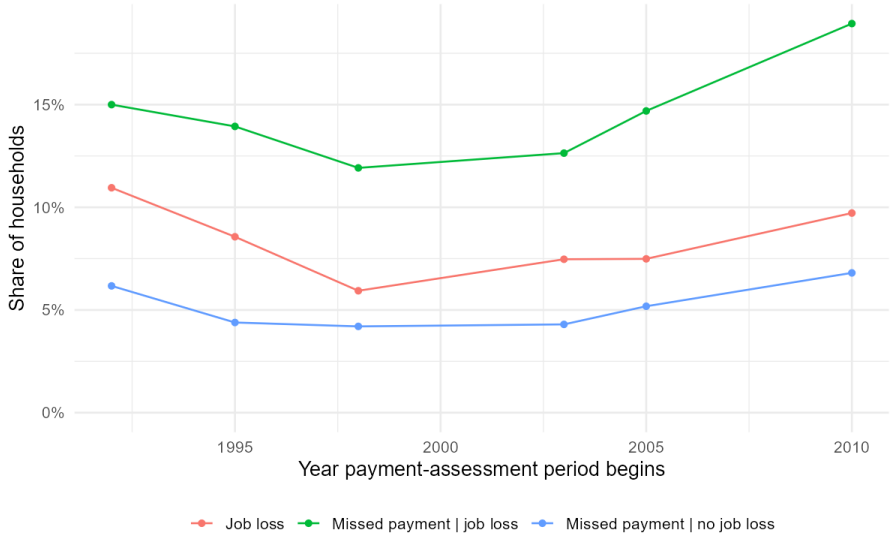



Figure A.1: Missed housing payments and job loss across SIPP assessment windows, 1992–2010

*Notes:* Data are the 1991–2008 SIPP. The three lines are the share of job losers missing a housing payment, the share of households without a job loss missing one, and the share of households experiencing a job loss.

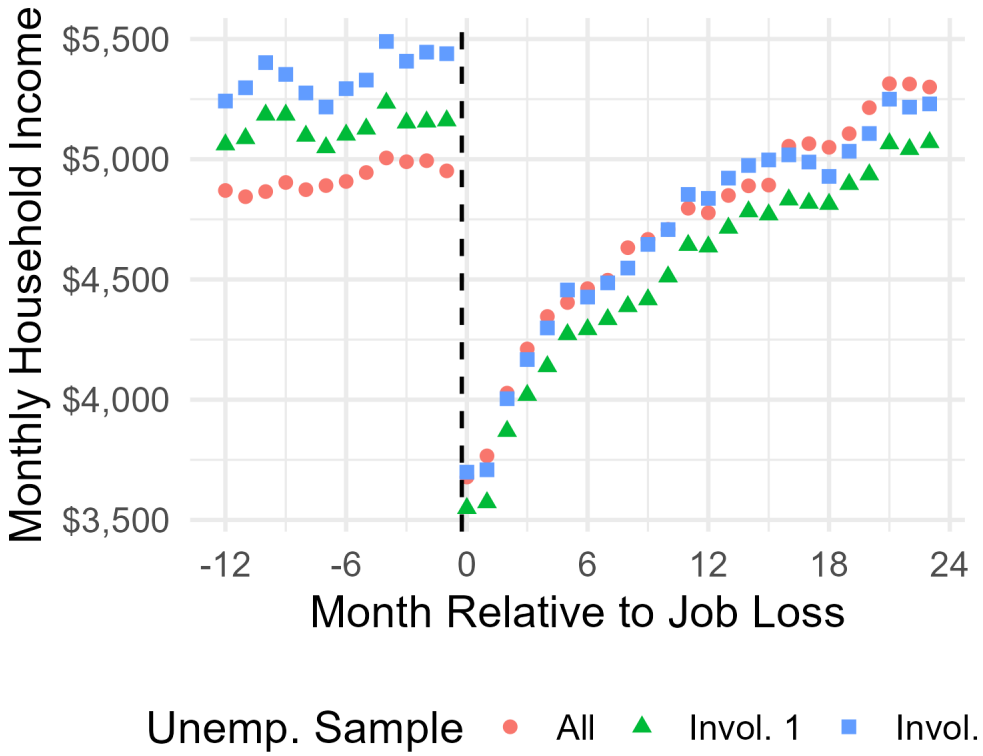
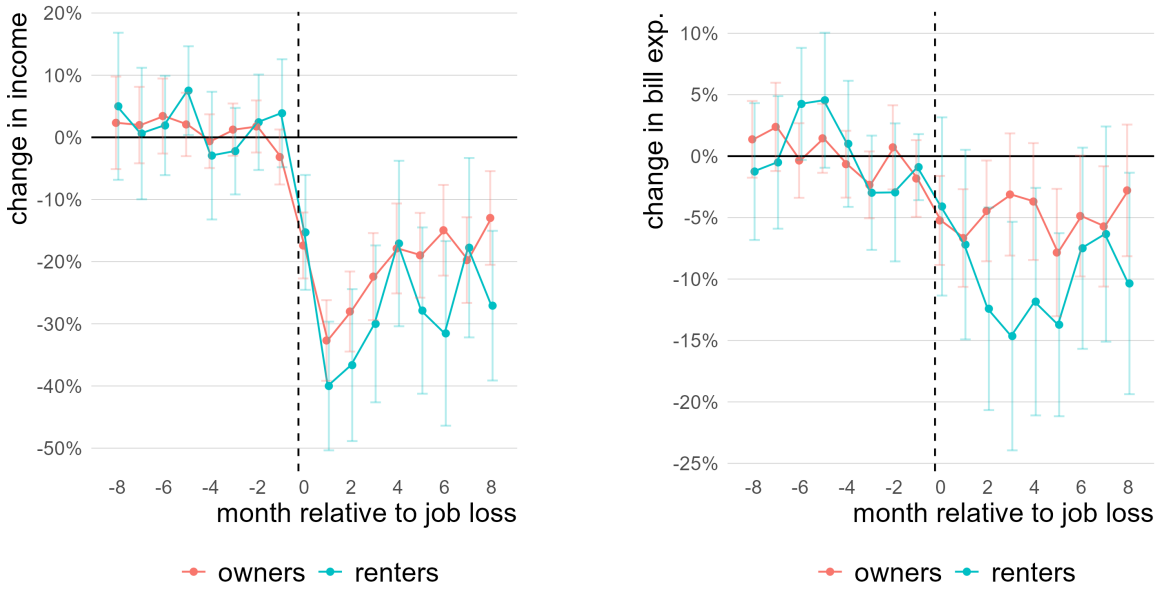



Figure A.2: Change in income around job loss

*Notes:* Data are the 1991–2008 SIPP. The figure plots mean monthly household income against the month relative to job loss, for three samples of job-losing households: all job losers in the main sample, and those meeting the "Involuntary 1" and "Involuntary 2" definitions of Section 3.1. The dashed vertical line marks the job-loss month.



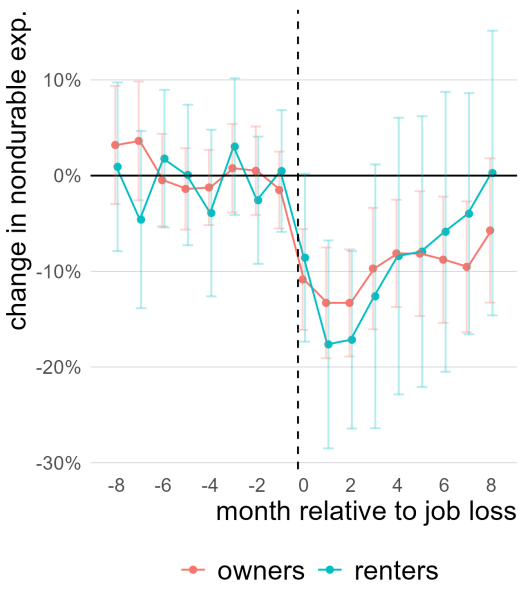

(a) Total Income

(b) Bills

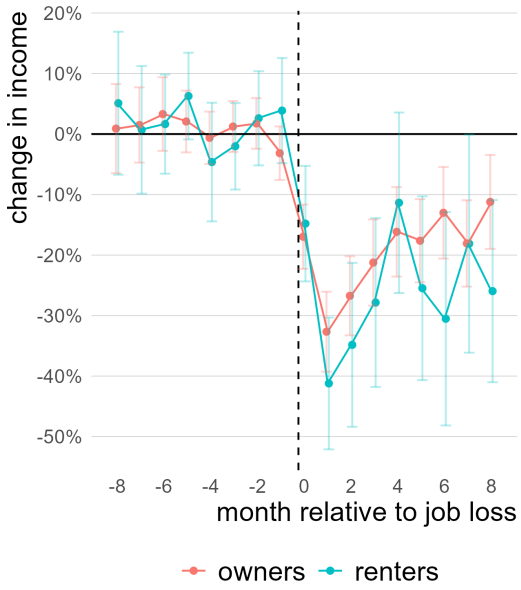
Figure A.3: Changes in income and bill payments around job loss

*Notes:* Data are the monthly RAND ALP, May 2009–April 2013. The figure plots total household income and bill payments, the sum of housing, utility, and auto payments. The specification, treatment and control definitions, and standard errors are those of Figure 3. Error bars are 95% confidence intervals.

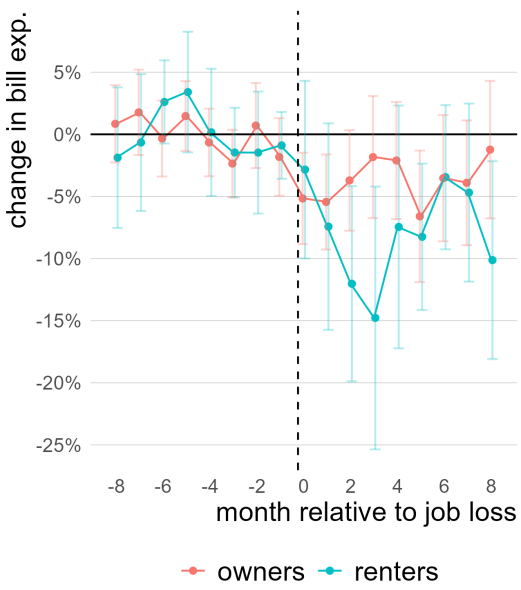

(a) Housing




(b) Nondurables




(c) Total Income




(d) Bills

Figure A.4: Changes in expenditure around job loss, dropping households when they move

*Notes:* Data are the monthly RAND ALP, May 2009–April 2013. The figure repeats Figure 3 and Online Appendix Figure A.3 with movers removed. A household leaves the sample from the month it changes residence onward, and treated and control households are censored in the same way. Move dates come from the panel's retrospective move modules. Households whose move status is unobserved are retained, and households that moved in the six months before month 0 are already outside the sample. The specification, treatment and control definitions, and standard errors are those of Figure 3. Error bars are 95% confidence intervals.

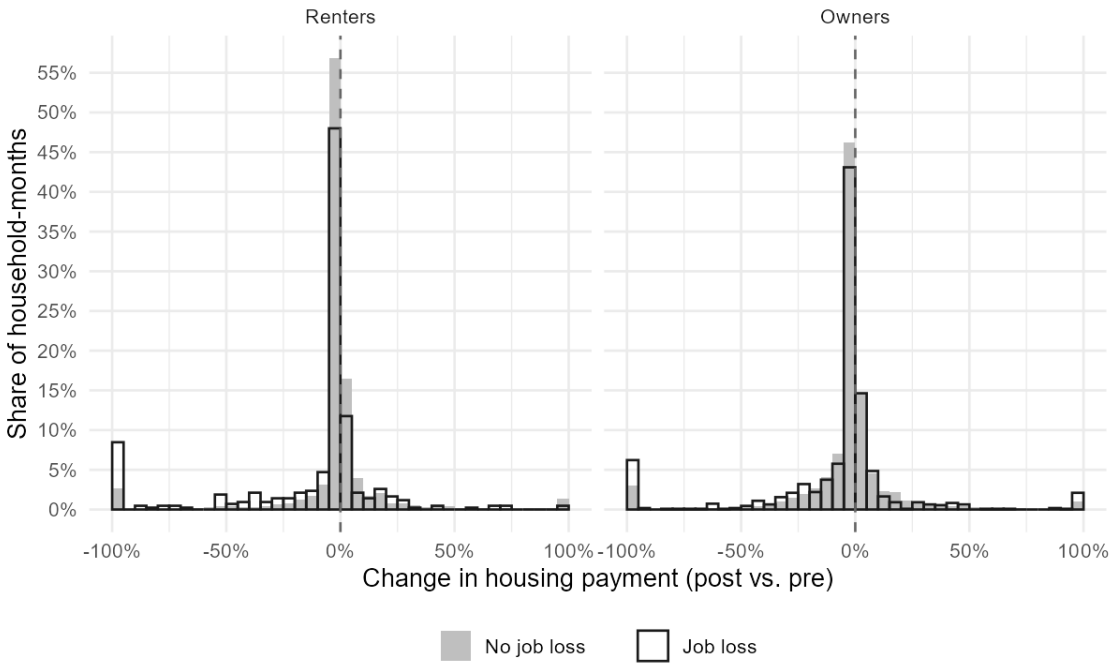



Figure A.5: Distribution of monthly housing payments after job loss

*Notes:* Data are the monthly RAND ALP, November 2009–April 2013. The figure plots the distribution of the housing payment in each of the six months beginning with the month of job loss, expressed as a change from the household's average monthly payment over the six months before, for households that experience a job loss (dark outline) and those that do not (shaded), separately for renters and owners. Bars report the share of household-months in each bin and sum to one within each panel and each group. Percent changes are winsorized at ±100%. The mass at −100% is months with no housing payment.

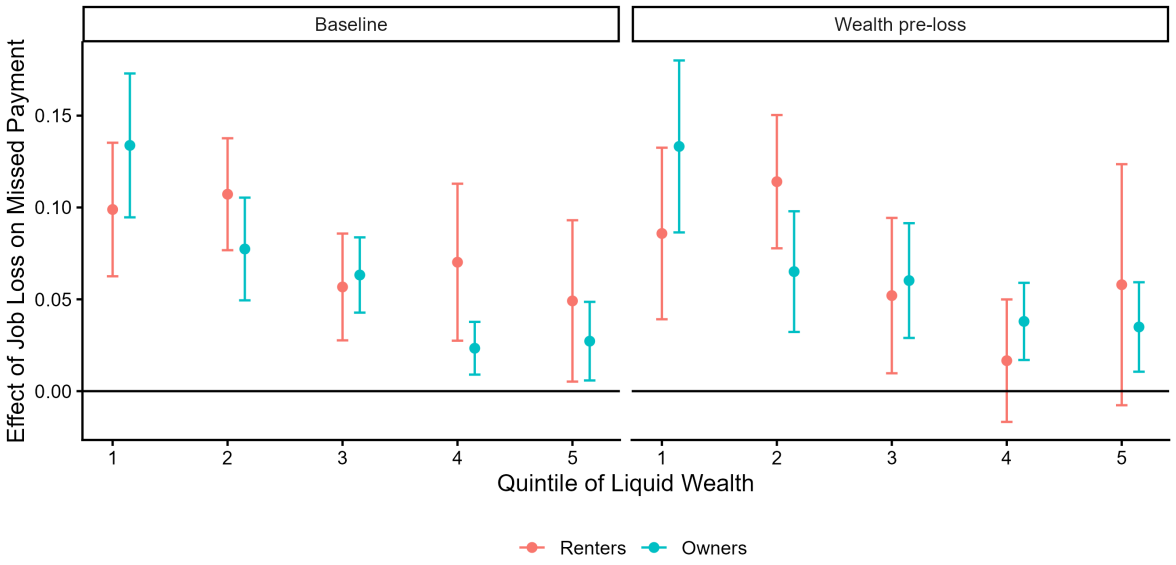



Figure A.6: Liquid-wealth heterogeneity under a wealth-measurement timing restriction

*Notes:* Data are the 1991–2008 SIPP, one observation per household over the twelve-month payment-assessment period. The figure reports the effect of job loss on missed payments by liquid-wealth quintile, as in Figure 2. The left panel repeats that figure's baseline estimates. The right panel keeps only job losers whose liquid wealth was measured before their job-loss month. Households without a job loss are not restricted, and wealth quintiles are recomputed within the restricted sample. Bars are 95% confidence intervals from standard errors clustered by state.


(a) Renters

(b) Owners

Figure A.7: Move or attrition rates by missed-payment status

*Notes:* Data are the 1991–2008 SIPP, followed monthly from the job-loss month, for the job-losing households of Figure 4. The panels plot the cumulative share of households that have either changed residence or left the sample in each of the 24 months after the loss, separately for households that did and did not miss a housing payment. Panel (a) reports renters and panel (b) owners with a mortgage.

## Online Appendix B. Intensive Margin: Accounting for Movers

I observe whether households moved within six months after job loss for some, but not all, households. Roughly once a year between 2011 and 2015, the ALP Financial Crisis Survey asks respondents to report the dates of any changes in residence since a fixed earlier date, October 2008 in the first two modules and January 2011 in the later three, and it allows households to report multiple moves. For these respondents, I observe the timing of each move. Move status is unknown for households that miss these interviews, and for every household in the months after July 2015, when the last module ends while the panel runs into 2016.

The goal is to identify how much, on average, housing payments would decline if no households had moved, which provides an estimate of the true availability of missed payments. Let $M = 1$ for households that move in that six-month period, $M = 0$ for households that do not move, and $N = 1$ if the move status of the household is not observed ($N = 0$ otherwise). In potential outcomes notation, $\Delta y(0)$ is the change in housing payments (relative to the pre-period) that would occur if the household does not move ($M = 0$), $\Delta y(1)$ is the change in housing payments if the household does move ($M = 1$), and $\Delta y$ is the observed outcome. The object of interest is $E[\Delta y(0)|\texttt{job loss}]$, where `job loss` indicates that the household experienced unemployment. For brevity, I suppress this conditioning on `job loss` for the rest of this section. $E[\Delta y(0)]$ can be written as

$$\begin{aligned} E[\Delta y(0)] = \quad & \underbrace{E[\Delta y(0)|M=0,N=0] \times P(M=0,N=0)}_{\Delta y(0) \text{ for stayers}} \\ & + \underbrace{E[\Delta y(0)|M=1,N=0] \times P(M=1,N=0)}_{\Delta y(0) \text{ for movers}} + \underbrace{E[\Delta y(0)|N=1] \times P(N=1)}_{\Delta y(0) \text{ for unknown}}. \end{aligned}$$

The first of these three terms is observed, the second is an unobserved counterfactual, and, in the third term, it is unknown whether the observed $\Delta y_i$ equals $\Delta y_i(0)$ or $\Delta y_i(1)$ because individual $i$'s move status is unknown.

To proceed, I make assumptions about the two unobserved terms to provide upper bounds on $E[\Delta y(0)]$. For those who move, I assume $E[\Delta y(0)|M = 1, N = 0] \leq 0$, i.e., their rent or housing payments would not have increased on average if they had remained in their previous residence. That is, landlords and lenders would not, on average, *raise* housing payments for recent job losers. For those whose move status is unknown, I make two separate assumptions leading to two different upper bounds. The stronger assumption is that move status is missing at random, i.e., $N$ is independent of $\Delta y(0)$ and $M$. Missingness here is largely a feature of the survey design rather than of the household: no module covers the

months after July 2015, so move status is unobserved for every job loss late in the sample, whatever the household does. Missingness at random also extends the assumption on movers from $E[\Delta y(0)|M = 1, N = 0] \leq 0$ to $E[\Delta y(0)|M = 1] \leq 0$. The two together lead to the first upper bound (B1)

$$\begin{aligned} E[\Delta y(0)] &\leq E[\Delta y(0)|M = 0] \times P(M = 0) \\ &= E[\Delta y(0)|M = 0, N = 0] \times \frac{P(M = 0, N = 0)}{P(N = 0)}. \end{aligned}$$

The first line decomposes $E[\Delta y(0)]$ over $M$ alone and drops the movers' term, and the second recovers $E[\Delta y(0)|M = 0]$ and $P(M = 0)$ from the households whose move status is observed, using the independence of $N$. Move status, however, may not be missing at random. Therefore, a more conservative assumption that $E[\Delta y(0)|N = 1] \leq 0$, which essentially treats all unknown observations as movers, leads to a second upper bound (B2) that dispenses with the missing-at-random assumption entirely

$$E[\Delta y(0)] \leq E[\Delta y(0)|M = 0, N = 0] \times P(M = 0, N = 0).$$

Table B.1 shows these probabilities, observed changes in housing payments for stayers, movers, and with unknown status, and the two upper bounds. The changes in housing payments are estimated using equation (2), but restricting the sample of job losers to stayers ($M = 0, N = 0$), movers ($M = 1, N = 0$), or unknown ($N = 1$). The upper bounds are reported in the final two columns. Assuming that move status is missing at random, the upper bound B1 for the overall decline is 4.1%, with a bound of 5.5% for renters and 3.6% for owners. With the more conservative assumptions in the B2 upper bounds, the estimated upper bounds are 3.3% for the overall sample, with a bound of 4.1% for renters and 2.9% for owners. These upper bounds show that the average declines in housing payments remain fairly large - around half the size of the reduction in nondurable expenditures - even under conservative assumptions about counterfactual payments by those who moved.

Table B.2 repeats Table B.1, but using the monthly observations in the ALP, and using the two months after job loss ($t = 0, 1$) as the post-period. Even fewer observations either move or are unobserved in the monthly data. Because the declines are negative, the upper bounds lie closer to zero than the observed declines in column (1), but they move only part of the way.

Table B.1: Robustness: accounting for movers

| | Δhousing | Share of Respondents: $P(M,N)$ | | | Group's Δhousing: $E[\Delta y_i \mid M,N]$ | | | Upper Bounds $E[\Delta y(0)]$ | |
|---|---|---|---|---|---|---|---|---|---|
| | | stay | move | not obs. | stay | move | not obs. | B1 | B2 |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| All | -0.048 | 0.704 | 0.084 | 0.212 | -0.046 | -0.090 | -0.034 | -0.041 | -0.033 |
| Renters | -0.075 | 0.588 | 0.147 | 0.265 | -0.069 | -0.131 | -0.047 | -0.055 | -0.041 |
| Owners | -0.036 | 0.773 | 0.046 | 0.181 | -0.038 | -0.037 | -0.026 | -0.036 | -0.029 |

*Notes:* Data are quarterly household-level observations from the RAND ALP, 2009–2016. Column (1) is the observed average decline from column (3) of Table 3, for all respondents, renters, and owners with mortgages. Columns (2) to (4) are the shares of job-losing households in each sample that stayed in the same residence during the post-period ($M = 0, N = 0$), moved ($M = 1, N = 0$), or whose move status is not observed ($N = 1$). Columns (5) to (7) are the observed decline within each of those groups, estimated from equation (2) with the job losers restricted to the respective category and the comparison group of continuously employed households unchanged. Households observed to move in one part of the post-period and unobserved in another are counted as movers in columns (2) to (4) and are also included in column (7). Columns (8) and (9) are the bounds B1 and B2. Neither bound uses column (7).

Table B.2: Robustness: accounting for movers, monthly data

| | Δhousing | Share of Respondents: $P(M,N)$ | | | Group's Δhousing: $E[\Delta y_i \mid M,N]$ | | | Upper Bounds $E[\Delta y(0)]$ | |
|---|---|---|---|---|---|---|---|---|---|
| | | stay | move | not obs. | stay | move | not obs. | B1 | B2 |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| All | -0.067 | 0.929 | 0.044 | 0.027 | -0.053 | -0.285 | -0.174 | -0.051 | -0.049 |
| Renters | -0.116 | 0.914 | 0.075 | 0.011 | -0.108 | -0.231 | 0.003 | -0.100 | -0.099 |
| Owners | -0.045 | 0.936 | 0.029 | 0.034 | -0.029 | -0.359 | -0.199 | -0.029 | -0.028 |

*Notes:* Data are the monthly RAND ALP, November 2009–April 2013, with the two months after job loss ($t = 0, 1$) as the post-period. The table repeats Table B.1 on the monthly observations. Column (1) is the observed average decline from Table A.10, Panel A, column (4). The remaining columns are defined as in Table B.1.

# Online Appendix C. Theory

This appendix supports the model of Section 4. Online Appendix C.1 covers the equilibrium with an observable shock $\varepsilon$. Online Appendix C.2 states and proves the observability results and the comparative statics in the eviction cost and the moving cost. Online Appendix C.3 contains two extensions: the landlord chooses the transfer freely, and he can commit to evicting claimants at random. Online Appendix C.4 reports the illustrative calibration and the construction behind the model tests of Table 7.

## C.1. The equilibrium with an observable shock

This section examines the equilibrium outcome when accommodations follow the feasibility constraints $r_1, r_2 \geq 0$, $r_2 \leq \bar{m} \equiv \min\{m, (R-S)/\beta\}$, and $r_1 + \beta r_2 = R - S$ with $S \equiv \theta k_L$.

*C.1.1. The eviction payoff*

Section 4.1 specifies the eviction payoff through the constant consumption an evicted tenant would accept in place of the eviction path, $U^E(\varepsilon) = (1+\beta)\,u\big(e(\varepsilon)\big)$ with $e(\varepsilon) = a - b\varepsilon$. Let $\mathcal{M}(c_1, c_2)$ be the constant consumption worth as much as the pair $(c_1, c_2)$, so that $(1+\beta)u(\mathcal{M}(c_1,c_2)) = u(c_1)+\beta u(c_2)$, and let $\mathcal{M}^A(\bar{\varepsilon}) \equiv \mathcal{M}\big(c_1^*(\bar{\varepsilon}), c_2^*(\bar{\varepsilon})\big)$ at the Lemma 1 accommodation contract. For CRRA utility ($\rho \neq 1$), $\mathcal{M}(c_1,c_2) = \left(\frac{c_1^{1-\rho}+\beta c_2^{1-\rho}}{1+\beta}\right)^{\frac{1}{1-\rho}}$; for $\rho = 1$, $\mathcal{M}(c_1,c_2) = c_1^{1/(1+\beta)} c_2^{\beta/(1+\beta)}$. To have both full payment and evictions, the following conditions are assumed on the eviction payoff:

**Assumption 1** (Conditions on the eviction payoff)**.** *The transfer satisfies $S \in [0, R)$ and the shock distribution $G$ is continuous with compact support $[0, \bar{\varepsilon}]$, $\bar{\varepsilon} < y - R$. The following hold:*

(a) $0 < a < y - R$;

(b) $a > \mathcal{M}^A(\bar{\varepsilon})$ *and* $0 \leq b < \frac{a - \mathcal{M}^A(\bar{\varepsilon})}{\bar{\varepsilon}}$.

Condition (a) makes eviction the worse option at a zero shock, $U^E(0) < U^F(0)$. Condition (b) makes it the better option at the worst shock, $U^E(\bar{\varepsilon}) > V^A(\bar{\varepsilon})$. Since $\mathcal{M}^A(\bar{\varepsilon}) < y - R$, parameters satisfying (a) and (b) exist.

*C.1.2. The accommodation contract*

The following lemma solves for the tenant's optimal accommodation timing over the range of possible shocks. Where the transfer covers more than her shortfall ($\varepsilon < S$), the accommodation more than compensates for the income loss and the tenant saves some period 1 consumption.

**Lemma 1** (The accommodation contract)**.** *Let $\varepsilon^{\text{cap}} \equiv S + (1+\beta)\bar{m}$. For any strictly increasing, strictly concave, differentiable $u$ and any shock $\varepsilon \in [0, y - R)$, the tenant's preferred feasible accommodation is unique in consumption:*

(i) *if $\varepsilon \leq \varepsilon^{\text{cap}}$, consumption is equalized across the two periods at*

$$c^*(\varepsilon) = y - R - \frac{\varepsilon - S}{1+\beta}, \tag{C.1}$$

*delivered by the catch-up $r_2^* = \max\big\{0,\, (\varepsilon - S)/(1+\beta)\big\}$ and saving $\sigma^* = \max\big\{0,\, \beta(S - \varepsilon)/(1+\beta)\big\}$;*

(ii) *if $\varepsilon > \varepsilon^{\text{cap}}$, the catch-up cap binds: $r_2^* = \bar{m}$, $\sigma^* = 0$, and consumption is $c_1^* = y - R + S + \beta\bar{m} - \varepsilon$ in period 1 and $c_2^* = y - R - \bar{m} > c_1^*$ in period 2.*

*In both cases* $r_1^* = R - S - \beta r_2^*$. *The optimal consumption pair is written* $\big(c_1^*(\varepsilon), c_2^*(\varepsilon)\big)$. $V^A(\varepsilon)$ *denotes the resulting payoff.*

*Proof.* With $r_1 = R - S - \beta r_2$, $r_2 \in [0, \bar{m}]$, and saving $\sigma \geq 0$, the pairs $c_1 = y - \varepsilon - r_1 - \sigma$ and $c_2 = y - R - r_2 + \sigma/\beta$ give the budget constraint and no-borrowing constraint

$$c_1 + \beta c_2 = (1+\beta)(y - R) + S - \varepsilon, \qquad c_2 \geq y - R - \bar{m}. \tag{C.2}$$

Maximizing the strictly concave $u(c_1) + \beta u(c_2)$ on the budget constraint equalizes consumption at $c^*(\varepsilon)$ in (C.1), which satisfies the no-borrowing constraint only when $\varepsilon \leq \varepsilon^{\text{cap}}$: case (i). Otherwise the no-borrowing binds at $c_2 = y - R - \bar{m}$, leaving $c_1 = y - R + S + \beta\bar{m} - \varepsilon < c_2$: case (ii). Both are strictly positive because $\varepsilon < y - R$ and $m < y - R$. Inverting, $r_2^* = \max\{0,\, y - R - c_2^*\}$ and $\sigma^* = \beta \max\{0,\, c_2^* - (y - R)\}$. □

*C.1.3. Proof of Proposition 1*

First, note that accommodation always provides at least as much utility as full payment. For every $\varepsilon \in [0, y - R)$ and every $S \in (0, R)$, the transfer expands the tenant's budget by $S$, so the segment (C.2) contains $(y - \varepsilon - R + S,\, y - R)$, which is preferred to the full-payment pair $(y - \varepsilon - R,\, y - R)$. Hence $V^A(\varepsilon) > U^F(\varepsilon)$ whenever $S > 0$. At $S = 0$ the segment contains the full-payment pair, but for $\varepsilon > 0$ the pair is not the unique optimum of Lemma 1, which either equalizes consumption or sets $c_2^* = y - R - \bar{m} < y - R$, so the strict inequality $V^A(\varepsilon) > U^F(\varepsilon)$ holds for every $\varepsilon > 0$ even when $S = 0$.

Let $D^F(\varepsilon) = U^F(\varepsilon) - U^E(\varepsilon)$ and $D^A(\varepsilon) = V^A(\varepsilon) - U^E(\varepsilon)$. The following lemma shows there are unique shock thresholds $\varepsilon^F$ and $\varepsilon^E$ satisfying $D^F(\varepsilon^F) = 0$ and $D^A(\varepsilon^E) = 0$. Intuitively, this occurs because the constant consumption equivalents of full payment and of accommodation are concave in $\varepsilon$, while the consumption equivalent of eviction, $e(\varepsilon) = a - b\varepsilon$, is linear. The argument needs only that $e$ be weakly convex.

**Lemma 2** (Single crossing)**.** *Let* $u$ *be CRRA and let Assumption 1 hold. Then* $D^F$ *has a unique zero* $\varepsilon^F \in (0, \bar{\varepsilon})$*, with* $D^F > 0$ *on* $[0, \varepsilon^F)$ *and* $D^F < 0$ *on* $(\varepsilon^F, \bar{\varepsilon}]$*. Similarly,* $D^A$ *has a unique zero* $\varepsilon^E \in (\varepsilon^F, \bar{\varepsilon})$*, with* $D^A > 0$ *on* $[0, \varepsilon^E)$ *and* $D^A < 0$ *on* $(\varepsilon^E, \bar{\varepsilon}]$*.*

*Proof.* With $\mathcal{M}(c_1, c_2)$ as defined above, let

$$\mathcal{M}^F(\varepsilon) = \mathcal{M}\big(y - \varepsilon - R,\ y - R\big), \qquad \mathcal{M}^A(\varepsilon) = \mathcal{M}\big(c_1^*(\varepsilon),\ c_2^*(\varepsilon)\big)$$

be the constant consumption equivalents of full payment and of the Lemma 1 contract. Since

$u$ is strictly increasing and $U^E = (1+\beta)u(e)$, where $e = a - b\varepsilon$,

$$\operatorname{sign} D^F = \operatorname{sign}\big[\mathcal{M}^F - e\big], \qquad \operatorname{sign} D^A = \operatorname{sign}\big[\mathcal{M}^A - e\big],$$

so both comparisons can be made in consumption units. Under CRRA, $\mathcal{M}$ is a CES aggregator of $(c_1, c_2)$ with elasticity of substitution $1/\rho$ so it is increasing and concave. Hence $\mathcal{M}^F$ is concave in $\varepsilon$ since it is a concave function of $y - \varepsilon - R$. The shape of $\mathcal{M}^A$ can be read off the two cases of Lemma 1. For $\varepsilon \le \varepsilon^{\text{cap}}$, consumption is equalized, so $\mathcal{M}^A(\varepsilon) = c^*(\varepsilon)$, which is affine in $\varepsilon$ with slope $-1/(1+\beta)$. For $\varepsilon > \varepsilon^{\text{cap}}$, $c_2^*$ is constant and $c_1^*$ is affine in $\varepsilon$, so $\mathcal{M}^A(\varepsilon) = \mathcal{M}\big(y - R + S + \beta\bar{m} - \varepsilon,\ y - R - \bar{m}\big)$ is concave in $\varepsilon$. At $\varepsilon^{\text{cap}}$ the two branches agree in level and slope: both equal $y - R - \bar{m}$ and both have slope $-1/(1+\beta)$ in $\varepsilon$, since $\partial\mathcal{M}/\partial c_1 = (\mathcal{M}/c_1)^\rho/(1+\beta)$ is $1/(1+\beta)$ at equalized consumption ($\mathcal{M} = c_1 = c^*(\varepsilon)$). Hence $\mathcal{M}^A$ is continuous and concave. Since $e$ is affine, $g^F \equiv \mathcal{M}^F - e$ and $g^A \equiv \mathcal{M}^A - e$ are continuous and concave in $\varepsilon$.

A continuous concave $g$ on $[\alpha, \bar{\varepsilon}]$ with $g(\alpha) > 0 > g(\bar{\varepsilon})$ has a unique zero in the interior, is positive before it, and is negative after it. Existence is the intermediate value theorem. For the rest, let $g(\varepsilon_1) = 0$ with $\varepsilon_1 > \alpha$ and take $\varepsilon > \varepsilon_1$, writing $\varepsilon_1 = \lambda\alpha + (1-\lambda)\varepsilon$ with $\lambda \in (0,1)$; concavity gives $0 = g(\varepsilon_1) \ge \lambda g(\alpha) + (1-\lambda)g(\varepsilon)$, so $g(\varepsilon) \le -\lambda g(\alpha)/(1-\lambda) < 0$.

Apply this twice. First, $g^F(0) > 0$ by Assumption 1(a), and $g^F(\bar{\varepsilon}) < g^A(\bar{\varepsilon}) < 0$ since $V^A > U^F$ and by Assumption 1(b), which gives $\varepsilon^F$ and its sign pattern. Second, on $[\varepsilon^F, \bar{\varepsilon}]$, $g^A(\varepsilon^F) > g^F(\varepsilon^F) = 0$, again since $V^A > U^F$, and $g^A(\bar{\varepsilon}) < 0$ by (b), which gives $\varepsilon^E \in (\varepsilon^F, \bar{\varepsilon})$ and its sign pattern there. Below $\varepsilon^F$, $g^A \ge g^F > 0$, so $\varepsilon^E$ is the only zero of $D^A$ on the whole support. □

*Proof of Proposition 1.* Lemma 2 delivers the two thresholds and their ordering: $\varepsilon^F \in (0, \bar{\varepsilon})$ with $D^F > 0$ below it and $D^F < 0$ above it, and $\varepsilon^E \in (\varepsilon^F, \bar{\varepsilon})$ with $D^A > 0$ below it and $D^A < 0$ above it. For $\varepsilon \in [0, \varepsilon^F)$, $D^F > 0$ and the tenant's default threat is not credible, so the landlord does not offer accommodations. The outcome is full payment. For $\varepsilon \in [\varepsilon^F, \varepsilon^E]$: $D^F \le 0$ and $D^A \ge 0$, the default threat is credible so the landlord offers the accommodation, and it is accepted. For $\varepsilon \in (\varepsilon^E, \bar{\varepsilon}]$, $D^A < 0$ and the tenant prefers eviction to the best accommodation, and the outcome is eviction. In the two boundary cases, $\varepsilon^F$ and $\varepsilon^E$, the tenant is indifferent, and I resolve both ties toward the accommodation. □

### C.2. Why the landlord and not a third party

*C.2.1. The observability results*

*Posted contracts and saving.* Throughout, the posted contract with deferral $r_2 \in [0, \bar{m}]$ is $(r_1, r_2) = (R - S - \beta r_2,\ r_2)$, and $\tilde{V}(\varepsilon; r_2)$ denotes type $\varepsilon$'s payoff from accepting it and saving

optimally. Accepting and saving $\sigma \geq 0$ yields $c_1 = y - \varepsilon - r_1 - \sigma$ and $c_2 = y - R - r_2 + \sigma/\beta$, so the attainable consumption set is the budget-line segment

$$B(\varepsilon; r_2) = \big\{(c_1, c_2) \geq 0 : \ c_1 + \beta c_2 = (1+\beta)(y-R) + S - \varepsilon, \ \ c_2 \geq y - R - r_2\big\}. \quad \text{(C.3)}$$

Let $\mathcal{A}(r_2)$ denote the acceptance set: the types for which $\tilde{V}(\varepsilon; r_2) \geq \max\{U^F(\varepsilon), U^E(\varepsilon)\}$, with ties broken toward accepting.

*Pooling and the menu.* While the landlord could, in theory, post a menu of accommodations, this is redundant.

**Lemma 3** (Every tenant claims the transfer)**.** *For any feasible posted contract with $S > 0$, every tenant strictly prefers accepting it to paying in full.*

*Proof.* Accept and save $\sigma = \beta r_2$. Period-2 consumption is $y - R - r_2 + \sigma/\beta = y - R$, identical to full payment. Period-1 consumption is $y - \varepsilon - r_1 - \beta r_2 = y - \varepsilon - (R - S) = (y - \varepsilon - R) + S$, higher by $S > 0$. □

**Lemma 4** (Saving converts the posted contract into a menu)**.** *The following hold:*

(i) $\tilde{V}(\varepsilon; r_2)$ *is weakly increasing in* $r_2$ *for every* $\varepsilon$*;*

(ii) $\tilde{V}(\varepsilon; \bar{m}) = V^A(\varepsilon)$ *for every* $\varepsilon$*;*

(iii) $\mathcal{A}(\bar{m}) = [0, \varepsilon^E]$*, and* $\mathcal{A}(r_2) \subseteq [0, \varepsilon^E]$ *and* $\mathcal{A}(r_2) \supseteq [0, \varepsilon^F]$ *for every* $r_2 \in [0, \bar{m}]$*.*

*Proof. (i)* Raising $r_2$ lowers the floor $y - R - r_2$ in (C.3) and leaves the budget line unchanged, so $B(\varepsilon; r_2)$ grows.

*(ii)* At the posting $\bar{m}$ the attainable set $B(\varepsilon; \bar{m})$ is the segment (C.2), which is exactly the set the tenant maximizes over in Lemma 1. The two problems therefore coincide.

*(iii)* Combining (i) and (ii), $\tilde{V}(\varepsilon; r_2) \leq \tilde{V}(\varepsilon; \bar{m}) = V^A(\varepsilon)$ for every $\varepsilon$ and every admissible $r_2$. Now classify types at the posting $\bar{m}$:

- $\varepsilon \leq \varepsilon^F$: $\tilde{V} > U^F \geq U^E$ (Lemma 3, then $D^F \geq 0$). Accept.
- $\varepsilon \in (\varepsilon^F, \varepsilon^E]$: $\tilde{V} = V^A \geq U^E$ by (ii) and $D^A \geq 0$ on this interval (Lemma 2), and $\tilde{V} > U^F$ by Lemma 3. Accept.
- $\varepsilon > \varepsilon^E$: by (ii), $\tilde{V} = V^A < U^E$, since $D^A < 0$ above $\varepsilon^E$. Reject; with $D^F < 0$ the rejecting type refuses payment and is evicted.

Hence $\mathcal{A}(\bar{m}) = [0, \varepsilon^E]$. Fix an arbitrary $r_2$. Types $\varepsilon > \varepsilon^E$ have $\tilde{V}(\varepsilon; r_2) \leq V^A(\varepsilon) < U^E(\varepsilon)$ and reject, so $\mathcal{A}(r_2) \subseteq [0, \varepsilon^E]$. Types $\varepsilon \leq \varepsilon^F$ accept any posting by Lemma 3 and $D^F \geq 0$, so $\mathcal{A}(r_2) \supseteq [0, \varepsilon^F]$. □

The lemma also delivers the menu redundancy claimed in the main text. Every item of a posted menu carries the same present value $R - S$, so the landlord's revenue per accepter does not depend on which item is chosen. By part (i) each tenant weakly prefers the menu's deepest item, so a menu has the acceptance set and profit of its deepest posting, and by part (iii) both are largest at $r_2 = \bar{m}$.

*The unraveling threshold.* Proposition 2 follows from the two lemmas and a comparison of the landlord's gains and losses.

*Proof of Proposition 2.* Posting nothing yields per-type profit $(1+\beta)R$ on $[0, \varepsilon^F)$ (full payment) and $(1+\beta)R - k_L$ on $[\varepsilon^F, \bar{\varepsilon}]$ (eviction). Posting $r_2$ yields $(1+\beta)R - S$ from each accepter and the no-posting payoff from each rejecter. Rejecters above $\varepsilon^F$ are evicted in both cases. By Lemma 4(iii), there are no rejecters in $[0, \varepsilon^F]$. The expected gain from posting $r_2$ is therefore the decomposition

$$\Delta_{\text{post}}(r_2) = (k_L - S)\,\Pr\big[\mathcal{A}(r_2) \cap [\varepsilon^F, \bar{\varepsilon}]\big] - S\,\Pr\big[\mathcal{A}(r_2) \cap [0, \varepsilon^F)\big] = (1-\theta)k_L\,\Pr\big[\mathcal{A}(r_2) \cap [\varepsilon^F, \bar{\varepsilon}]\big] - \theta k_L\, G(\varepsilon^F),$$

using $S = \theta k_L$ and, in the second equality, $\mathcal{A}(r_2) \supseteq [0, \varepsilon^F]$ (Lemma 4(iii)). $\Delta_{\text{post}}$ is therefore maximized by maximizing the needy mass reached (the types above $\varepsilon^F$, who would be evicted absent a posting), which is attained at $r_2 = \bar{m}$ with $\mathcal{A}(\bar{m}) = [0, \varepsilon^E]$:

$$\max_{r_2 \in [0, \bar{m}]} \Delta_{\text{post}} = (1-\theta)k_L\big[G(\varepsilon^E) - G(\varepsilon^F)\big] - \theta k_L G(\varepsilon^F) = k_L\big[(1-\theta)G(\varepsilon^E) - G(\varepsilon^F)\big].$$

This is strictly positive iff $(1-\theta)G(\varepsilon^E) > G(\varepsilon^F)$, i.e. iff $\theta < \big[G(\varepsilon^E) - G(\varepsilon^F)\big]/G(\varepsilon^E) = p_{\text{acc}}$. Posting therefore fails to pay, and accommodation unravels, exactly when $\theta \geq p_{\text{acc}}$, which is (8). □

*C.2.2. Limiting cases and comparative statics*

This section states and proves the limiting cases and the comparative statics described in the main text. The comparative statics here and the extension of Online Appendix C.3 both move the transfer away from the contracted $S$, so some new notation is needed.

*Notation under a free transfer.* Assumption 1 and the proofs of Online Appendix C.1 use only $S \in [0, R)$, never the contracted level $\theta k_L$, so that analysis applies unchanged with a free *transfer* $s \in [0, k_L]$ in place of $S$ and the catch-up cap $\bar{m}(s) \equiv \min\big\{m,\, (R-s)/\beta\big\}$. Let $V^A(\varepsilon; s)$ denote the value of the Lemma 1 contract at the transfer $s$, strictly increasing and

continuous in $s$ for every $\varepsilon$.[60]

Let $\varepsilon^B(s)$ be the largest shock at which the tenant accepts the transfer-$s$ accommodation, replacing the role of $\varepsilon^E$ in the main text ($\varepsilon^B(S) = \varepsilon^E$). Where part (b) of Assumption 1 holds at the transfer $s$, $\varepsilon^B(s)$ is the unique zero of $D^A(\cdot\,; s) \equiv V^A(\cdot\,; s) - U^E$ in $(\varepsilon^F, \bar{\varepsilon})$ (Lemma 2 with $s$ in place of $S$). Since $V^A$ is increasing in the transfer, part (b) holds at every $s \leq S$ and fails only above some level, where the transfer is large enough to make accommodation acceptable even at the worst shock. There acceptance reaches the entire support, and I set $\varepsilon^B(s) = \bar{\varepsilon}$.[61] On $[0, k_L]$, $\varepsilon^B$ is continuous and nondecreasing, strictly increasing while less than $\bar{\varepsilon}$.[62]

**Remark 1** (Conversion to lending)**.** *Under the maintained conditions above, as $k_L \to 0$ the transfer $S = \theta k_L$ vanishes but the accommodation region does not: accommodation survives, as a zero-interest loan repaid in full.*

*Proof.* $\Pi^A = (1+\beta)R - s$ and $\Pi^E = (1+\beta)R - k_L$ both converge to $\Pi^F = (1+\beta)R$, so in the limit the landlord funds no transfer and is indifferent among the three outcomes. On the tenant's side, $\varepsilon^B$ is continuous and strictly increasing with $\varepsilon^B(S) = \varepsilon^E$, and $\varepsilon^F$ does not involve $S$, so as $s = \theta k_L \to 0$ the accommodation region $[\varepsilon^F, \varepsilon^B(\theta k_L)]$ shrinks to the non-empty $[\varepsilon^F, \varepsilon^B(0)]$. On that region the surviving contract defers rent and repays the full $R$ in present value, and the deferral remains strictly valuable, $V^A(\varepsilon; 0) > U^F(\varepsilon)$ for every $\varepsilon > 0$. □

**Remark 2** (Weaker collateral, less accommodation)**.** *Hold $U^E$ and the transfer $S = \theta k_L$ fixed, and let Assumption 1 hold at $m \in (0, y - R)$. For every $m' \in (0, m]$ the three regions of Proposition 1 persist with the same full-payment threshold $\varepsilon^F$, and lowering the moving cost weakly shrinks accommodation. The threshold $\varepsilon^E(m')$ is nondecreasing, strictly increasing wherever the enforceable catch-up $\bar{m}' = \min\{m', (R - S)/\beta\}$ binds at the accommodation–eviction boundary.*

*Proof.* The moving cost enters the equilibrium only through the cap $\bar{m}$, and the cap enters the tenant's problem only through the no-borrowing floor in (C.2), not the budget line. A

[60] The transfer expands the budget segment (C.2) by $s$, so period-1 consumption can rise one for one with it. The exception is where the higher transfer tightens the catch-up cap $\bar{m}(s)$, in which case $r_1 = 0$ and the gain goes to period-2 consumption instead. Continuity is that of the closed form of Lemma 1 at the transfer $s$, whose two pieces agree at the case boundary.

[61] Where (b) fails, $\mathcal{M}^A(\cdot\,; s) - e$ is concave (proof of Lemma 2), strictly positive at $\varepsilon^F$, and nonnegative at $\bar{\varepsilon}$, so no type above $\varepsilon^F$ rejects the deepest deferral.

[62] For monotonicity, take $s < s'$. Strict monotonicity of $V^A$ in the transfer gives $D^A(\varepsilon^B(s); s') > 0$, so the zero of $D^A(\cdot\,; s')$ lies above $\varepsilon^B(s)$. For continuity, $V^A$ is continuous in the transfer, and $D^A(\cdot\,; s)$ is strictly positive just below its zero and strictly negative just above it, so the zero moves continuously with the transfer.

smaller cap $\bar{m}' < \bar{m}$ therefore shrinks the feasible set, so $V^A(\varepsilon; \bar{m}') \leq V^A(\varepsilon; \bar{m})$ for every $\varepsilon$, strictly exactly where the smaller set excludes the unique optimum of Lemma 1, i.e., when $\varepsilon > S + (1+\beta)\bar{m}'$. The three regions persist at $m'$: part (a) of Assumption 1 does not involve $m$, and part (b) follows from $V^A(\bar{\varepsilon}; \bar{m}') \leq V^A(\bar{\varepsilon}; \bar{m}) < U^E(\bar{\varepsilon})$. $\varepsilon^F$ does not change, since $D^F$ involves no cap. For the boundary, $D^A(\varepsilon^E(m); \bar{m}') \leq D^A(\varepsilon^E(m); \bar{m}) = 0$, strictly iff $\varepsilon^E(m) > S + (1+\beta)\bar{m}'$, so the unique zero of $D^A(\cdot\,; \bar{m}')$ satisfies $\varepsilon^E(m') \leq \varepsilon^E(m)$, strictly iff the smaller cap binds at the accommodation–eviction boundary under $m$. □

### C.3. Extensions

*Variable transfer under unobservability.* Suppose that, under unobservability, the landlord can adjust the transfer $S$, posting a single feasible contract $(r_1, r_2)$ with $r_1 + \beta r_2 = R - s$ at a transfer $s \in [0, k_L]$ of his choosing. As in Online Appendix C.2.1, with $s$ in place of $S$, every type in $[0, \varepsilon^F]$ accepts every posting, and the landlord's best posting is again the deepest deferral $(r_1, r_2) = (R - s - \beta\bar{m}(s),\, \bar{m}(s))$, accepted exactly by types $\varepsilon \leq \varepsilon^B(s)$. Define

$$p_{\text{acc}}(s) \equiv \frac{G(\varepsilon^B(s)) - G(\varepsilon^F)}{G(\varepsilon^B(s))},$$

the needy share of the pool the transfer $s$ attracts. Here $p_{\text{acc}}(S) = p_{\text{acc}}$, and $p_{\text{acc}}(\cdot)$ is nondecreasing. His gain over posting nothing is the main text's (9),

$$\Delta(s) = (k_L - s)\big[G(\varepsilon^B(s)) - G(\varepsilon^F)\big] - s\, G(\varepsilon^F).$$

The two results reported in the text follow directly. At $s = 0$ the second term vanishes, so $\Delta(0) = k_L\big[G(\varepsilon^B(0)) - G(\varepsilon^F)\big] > 0$, since $\varepsilon^B(0) > \varepsilon^F$ and $G$ has full support. And since $G(\varepsilon^B(s)) \leq 1$, $\Delta(s) \leq k_L\big[1 - G(\varepsilon^F)\big] - s$, so no transfer above $k_L\big[1 - G(\varepsilon^F)\big]$ is ever profitably posted. From this equation, transfers are only profitable when $s/k_L < p_{\text{acc}}(s)$, which generalizes (8).

*Stochastic eviction as a screening device.* So far, the posted contracts have not included the possibility of eviction. Suppose the contract space expands so that the landlord can, as a deterrent, commit to evicting claimants at random. He posts the deepest deferral at a transfer $s$ together with a probability $q \in [0, 1]$, a tenant who claims is evicted with probability $q$, and the contract executes otherwise. The possibility of eviction may screen some tenants who would otherwise pay in full and reduce the leakage in the posted contract above. For a tenant with $\varepsilon > \varepsilon^F$ the best alternative to claiming is eviction, so the possibility of eviction changes nothing and she claims exactly when $\varepsilon \leq \varepsilon^B(s)$. For a tenant who would

have paid in full the possibility of eviction is a penalty, and she claims only when

$$q \;\leq\; \hat{q}(\varepsilon; s) \;\equiv\; \frac{V^A(\varepsilon; s) - U^F(\varepsilon)}{V^A(\varepsilon; s) - U^E(\varepsilon)}.$$

The threshold is strictly positive, since every tenant strictly prefers a sure posting to full payment (Lemma 3), and rises to one as $\varepsilon \to \varepsilon^F$, where $U^F - U^E$ vanishes. The screen deters the tenants who need the accommodation least. But there is a cost. Every eviction the landlord carries out makes him worse off by $k_L - s$, the surplus the accommodation existed to save. This implies that random eviction requires commitment none of the arrangement's other threats require, since filing on a refused payment and nonrenewal after a broken promise are both sequentially rational ($k_L \leq R$, and a replacement tenant pays the same $R$). Additionally, no probability $q < 1$ removes the leakage entirely, and an eviction probability below $\hat{q}_{\min}(s) \equiv \min_{\varepsilon \leq \varepsilon^F} \hat{q}(\varepsilon; s)$ deters no one.

I also examine this random eviction mechanism in the calibrated model in Online Appendix C.4.1. Within the calibration, deterring the least-shocked tenant requires evicting several times the share of misses that end in eviction in the data, and the gain from posting stays negative at every eviction probability.

## C.4. Calibration and empirical tests

### *C.4.1. An illustrative calibration*

This appendix details the illustrative calibration behind Section 4.4. Table C.1 reports the chosen parameters and calibration moments. There is substantial uncertainty around the utility under eviction, and some also around the share of rent arrears that are repaid, so I report robustness to alternative choices of both.

Panel A lists the fixed parameters, with the source or convention for each in the third column. The landlord's eviction cost $k_L$ is \$3,500, the industry estimate of the all-in cost of an eviction (SmartMove, 2022), which equals 3.5 months of rent at the calibration's rent. The eviction payoff is the flat path stated in Section 4.1. I choose reasonable but admittedly arbitrary values for $a$ and $b$. I set $a$ to represent a 10% increase in contracted rent following eviction, i.e., $a = y - \frac{11}{10}R = 0.727$. For $b$, I assume the need-based resources triggered by eviction replace a share $\lambda = \frac{1}{8}$ of the marginal shock dollar and the tenant spreads the remainder evenly by saving, so $b = (1 - \lambda)/(1 + \beta) = 0.449$.

Panel B lists four targeted moments. The extensive-margin targets are the job-loss effect on renters' missed payments, i.e., the share of shocks leading to missed payments (0.093, Table 2) and the eviction risk borne per induced miss (0.094, Section 3.3). The intensive-margin targets describe the arrears themselves: the draw conditional on falling behind, three

Table C.1: Model parameterization

| | | |
|---|---|---|
| *Panel A: Fixed parameters* | | |
| Income (normalization) | $y = 1$ | annual income \$47,000 (SIPP renters, median) |
| Rent share | $R = 0.248$ | SIPP renters, median housing costs/income |
| Discount factor | $\beta = 0.95$ | annual |
| Risk aversion | $\rho = 2$ | standard |
| Landlord eviction cost | $k_L = 0.072$ | 3.5 months of rent, all-in |
| Eviction payoff (level, slope) | $a = 0.727$, $b = 0.449$ | $a = y - \frac{11}{10}R$; $b = (1-\lambda)/(1+\beta)$, $\lambda = 1/8$ |
| *Panel B: Targeted moments* | | |
| Job-loss effect on missed payments | 0.093 | paper's renter job-loss estimate |
| $P$(evict \| induced miss) | 0.094 | ratio of the two renter job-loss effects |
| Draw conditional on behind, $\bar{d}$ (share of annual income) | 0.062 | \$2,914, 3 months of rent (SHED, 0.75 pctile) |
| Repaid share of draw, $s$ | 0.50 | share of arrears spells resolved within a year |
| *Panel C: Fitted parameters* | | |
| Tenant surplus share | $\theta = 0.43$ | fitted |
| Moving cost | $m = 0.0326$ (\$1,534) | fitted |
| Shock distribution | Weibull($k = 1.19$, $\lambda = 0.090$) on $[0, 0.4]$ | fitted; truncated at $\bar{\varepsilon}$ |

*Notes:* Monetary quantities are shares of annual income, normalized so that $y = 1$. Panel C lists the three objects the fit recovers: the tenant's share of the accommodation surplus, the moving cost, and the shock distribution, a Weibull truncated at $\bar{\varepsilon} = 0.4$. Tables C.2 and C.3 report sensitivity to the eviction payoff and to the repaid share.

months of contracted rent $\bar{d} = 0.062$ of annual income[63], and the share of that draw repaid in present value, $s = 0.50$. Among renters behind after a past-year job loss, 51% still owed the balance at the interview, so about half of arrears spells resolve within the year (Online Appendix Table A.20).

These moments exactly identify the parameters $\theta$, $m$, and the distribution of shocks (restricted to a Weibull distribution on $[0, 0.4]$). First, $\theta$ and $m$ are identified by the draw $\bar{d}$ and the repaid share $s$. Recall $r_1 + \beta r_2 = R - S$ with $S = \theta k_L$. The amount deferred (the draw) is $\bar{d} = R - r_1$, while the amount repaid is $\beta r_2 = s\bar{d}$, which pins down $\theta = (1-s)\bar{d}/k_L$. These moments also identify the moving costs. The catch-up cap binds across the entire accommodated region, so $r_2 = m$ there (Lemma 1 and Online Appendix C.1.2), and the amount repaid is $\beta m = s\bar{d}$, which gives $m = s\bar{d}/\beta$.[64]

The eviction payoff fixes the threshold at which full payment ends, $\varepsilon^F$ solving $U^F(\varepsilon) = U^E(\varepsilon)$, a comparison involving neither $\theta$ nor $m$. The accommodation contract then fixes the eviction threshold, $\varepsilon^E$ solving $V^A(\varepsilon) = U^E(\varepsilon)$. Given the two thresholds, the share of

[63]The SHED 75th percentile balance still owed is 3.0 months of rent (Online Appendix Table A.20). I assume this upper quartile represents a group for whom little or no repayment has occurred, and so reflects the amount borrowed. A deferral of this size is also within what landlords tolerate. At three months of arrears, owners of small rental properties expect about two thirds of delinquencies to end in repayment or forgiveness rather than removal (Decker, 2021, Figure 13).

[64]The calibration does not impose the conditions that $\varepsilon^{\text{cap}} < \varepsilon^F$ or $m < (R-S)/\beta$. Instead, it solves the contract and both thresholds at each candidate $(\theta, m)$, re-fits the shock distribution, and averages the realized deferral and catch-up over the accommodation region to match the empirical moments. Both conditions, however, hold at the fitted values, so the closed forms above describe it exactly.

shocks leading to missed payments (0.093) and to evictions ($0.093 \times 0.094$) identify the two parameters governing the Weibull distribution for the shocks.[65]

*Implications.* The magnitudes the fit implies are illustrative. Since the contracted accommodation would not survive without observability (Proposition 2), I use a grid across transfer sizes to find the largest accommodation that does survive when the shock is unobservable to the landlord. The largest accommodation a landlord will post is 0.20 months of contracted rent or $193 a year. At that largest surviving posting, 3.9% of job-losing renters are evicted, and at the zero-transfer deferral 4.8%, against 0.9% under observability and 9.3% under unraveling.

Stochastic eviction does not loosen these bounds. At the fitted parameters, the smallest eviction probability that deters a tenant who could have paid in full, the $\hat{q}_{\min}$ of Online Appendix C.3, is 38%, 4.0 times the targeted 9.4% eviction risk per induced miss. Holding the transfer at the contracted $S$ of 1.5 months of rent, the landlord's gain from posting stays negative at every eviction probability short of one. Letting the transfer vary alongside the eviction probability, the largest transfer any posting sustains remains the 0.20 months found above, at an eviction probability of zero.

*Sensitivity to eviction payoffs and repayment share.* I examine sensitivity to the parameters governing utility under eviction and to the repayment share. Each row re-fits the model at the stated parameter values. The period-1 consumption drop is the prediction the main text takes to the data: the with-option column, which allows for accommodations, reports the model cell of Table 7 Panel B as a drop.

For both full payment and evictions to occur in equilibrium, Assumption 1 requires $\mathcal{M}^A(\bar{\varepsilon}) = 0.522 < a < y - R = 0.752$ and the slope $b < \left[a - \mathcal{M}^A(\bar{\varepsilon})\right]/\bar{\varepsilon}$, where the right-hand side equals 0.513 at the baseline level. Table C.2 varies these parameters, one at a time, from the baseline.[66] The share of job-losing renters evicted without observability is relatively stable, varying between 3.9% and 5.9% and above the observable 0.9% at every point in it. Additionally, in no row would the accommodation under observability survive under unobservability, so the unraveling result does not depend on the choice of the eviction payoff.

[65] I truncate the Weibull on [0, 0.40]. The bound caps the annual resource loss a job-losing household can suffer at 40% of income: Assumption 1 requires $\bar{\varepsilon} < y - R = 0.752$, so that consumption under full payment stays positive, and the eviction region is non-empty only if $\bar{\varepsilon} > \varepsilon^E$. It is an annual magnitude, not the decline in income during an unemployment spell: job-losing households in the ALP lose about 23% of household income over the two quarters around the loss (Table 1), so 0.40 covers a full year at more than the observed rate.

[66] The rows stop short of the Assumption 1 boundaries because the Weibull can no longer match the targeted moments there.

Stochastic eviction does not change this. A more painful eviction is a better deterrent, so the threshold $\hat{q}_{\min}$ falls as the level $a$ drops, but across this table and Table C.3 it stays between 23% and 61%. In no row does any eviction probability make posting the accommodation at the row's fitted transfer profitable. The period-1 consumption drop varies from 5.9% to 33.6% under the contract and 14.2% to 41.8% without it. The baseline pair puts the period-1 consumption change under accommodation at −22.4% against −21.6% among ALP job losers who missed (Table 7, Panel B), which supports that choice of baseline.

Table C.2: Sensitivity of the fit across the eviction payoff

| Eviction payoff | Shock distribution | | Evicted without | Stochastic eviction | Period-1 consumption drop (%) | |
|---|---|---|---|---|---|---|
| | Shape | Scale | observability (%) | $\hat{q}_{\min}$ (%) | With option | No option |
| *Panel A: level $a$, at the baseline slope $b = 0.449$* | | | | | | |
| $a = 0.742$ | 0.71 | 0.030 | 4.2 | 61 | 11.4 | 19.6 |
| $a = 0.734$ | 1.00 | 0.064 | 4.0 | 46 | 17.9 | 26.2 |
| $a = 0.727$ (baseline) | 1.19 | 0.090 | 3.9 | 38 | 22.4 | 30.7 |
| $a = 0.720$ | 1.31 | 0.114 | 3.9 | 32 | 26.6 | 34.9 |
| $a = 0.712$ | 1.19 | 0.128 | 4.2 | 27 | 31.1 | 39.3 |
| $a = 0.708$ | 0.76 | 0.125 | 4.9 | 25 | 33.6 | 41.8 |
| *Panel B: slope $b$, at the baseline level $a = 0.727$* | | | | | | |
| $b = 0.490$ | 0.81 | 0.092 | 4.4 | 38 | 29.5 | 37.8 |
| $b = 0.449$ (baseline) | 1.19 | 0.090 | 3.9 | 38 | 22.4 | 30.7 |
| $b = 0.400$ | 1.19 | 0.072 | 4.2 | 38 | 16.5 | 24.7 |
| $b = 0.350$ | 1.18 | 0.058 | 4.8 | 38 | 11.9 | 20.2 |
| $b = 0.300$ | 1.19 | 0.048 | 5.4 | 38 | 8.5 | 16.7 |
| $b = 0.250$ | 1.20 | 0.041 | 5.9 | 38 | 5.9 | 14.2 |

*Notes:* The eviction payoff is $U^E(\varepsilon) = (1+\beta)\,u(a - b\varepsilon)$. Each row re-fits $\theta$, $m$, and the shock distribution at the stated pair, holding all four targeted moments fixed. Panel A holds the slope at its baseline value and Panel B holds the level. The last four columns are re-computed from each row's fit. The eviction share is a share of all shocks, replacing $\varepsilon^E$ with the accommodation boundary at the largest transfer that survives when the landlord cannot see the shock, $\varepsilon^B(s^*)$ of Online Appendix C.3, re-solved at each row's fit. Its observable counterpart, $1 - G(\varepsilon^E)$, is fixed by two targeted moments and equals 0.9% in every row of both tables. The stochastic-eviction column is the deterrence threshold $\hat{q}_{\min}$, the smallest eviction probability needed to deter an unshocked tenant from accepting the accommodation. The period-1 drops average the consumption change over the accommodation region, under the accommodation contract and under full payment of the same shocks.

Table C.3 examines sensitivity to the repayment shares, varying $s$ from 0.20 to 0.75. Higher repaid shares lower $\theta$ and raise $m$. Greater repayment allows larger transfers to survive under unobservability. Additionally, in every row, the fitted surplus share stays at least twice the acceptance-pool share, $\theta$ between 0.21 and 0.69 against $p_{\text{acc}} = 0.09$, so the unraveling result is not sensitive to the repayment share. The period-1 consumption drop is stable across different levels of the repayment share.

Table C.3: Sensitivity of the fit across the repaid share

| Repaid share $s$ | $\theta$ | $m$ | Evicted without observability (%) | Stochastic eviction $\hat{q}_{\min}$ (%) | Period-1 consumption drop (%) With option | Period-1 consumption drop (%) No option |
|---|---|---|---|---|---|---|
| 0.20 | 0.69 | \$613 | 7.0 | 49 | 23.7 | 31.9 |
| 0.30 | 0.60 | \$920 | 5.9 | 46 | 23.3 | 31.5 |
| 0.50 (baseline) | 0.43 | \$1,534 | 3.9 | 38 | 22.4 | 30.7 |
| 0.65 | 0.30 | \$1,994 | 2.6 | 30 | 21.8 | 30.0 |
| 0.75 | 0.21 | \$2,301 | 1.8 | 23 | 21.4 | 29.6 |

*Notes:* Each row re-fits $\theta$, $m$, and the shock distribution at the stated repaid share $s$, holding the draw and the two extensive-margin targets of Table C.1 fixed. The moving cost is reported in dollars at the calibration's annual income. The four outcome columns are defined as in Table C.2.

### *C.4.2. Empirical tests of the model*

This section provides more detail on the data and specifications in Table 7.

*Panel A.* Mean weeks unemployed in the first year is the Kaplan–Meier restricted mean at a 52-week horizon, $E[\min(T, 52)]$. I test the difference in restricted means between two cells against its standard error, which applies the delta method to the Greenwood covariance of the survivor function and treats the two cells as independent samples. For the duration shares, a spell counts as still unemployed at three or six months only if the job loser is observed with a valid status through the horizon. Spells that leave the sample earlier without a recorded return to work enter neither the numerator nor the denominator. Differences in the shares are tested with a two-sample test of proportions with unpooled variances. Because the evicted cell is small, each difference is also tested with Fisher's exact test, which does not rely on a normal approximation. The two tests agree on every comparison reported in the text.

*Panel B.* The Model column is the fitted model's average percent change in period-1 consumption relative to the no-shock path $y-R$, over the full-payment region for Paid in full and the accommodation region for Missed, weighted by the fitted shock distribution conditional on the region. The eviction region has no ALP counterpart as evictions are so rare.

*Panel C.* Missed rent is being unable to pay rent in at least one of the last three months. The outcomes are whether the tenant reports being threatened with eviction or receiving an eviction notice during the same period. Mobile homes are excluded. Standard errors come from the survey's 160 replicate weights, $V(\hat{b}) = (4/160)\sum_r(\hat{b}_r - \hat{b})^2$, where $\hat{b}_r$ re-estimates the regression under replicate weight $r$.[67] Tables C.4 and C.5 list the controls and describe

[67]This is the formula the AHS documentation prescribes for public-use-file users (U.S. Census Bureau, 2021).

the estimation sample.

Table C.4: Controls in the observability regressions

| Control | Categories |
|---|---|
| Householder age | under 30; 30–44; 45–64; 65 and over |
| Female householder | indicator |
| Race | White; Black; Asian; other |
| Hispanic origin | indicator |
| Education | less than high school; high school; some college or associate; bachelor's or more |
| Married | indicator |
| Citizen | indicator |
| Household size | 1; 2; 3; 4 or more |
| Children present | indicator |
| Elders present | indicator |
| Any disabled member | indicator |
| Disability response missing | indicator |
| Income relative to the poverty line | below 100%; 100–199%; 200% or more |
| Rent burden | at most 30%; 30–50%; above 50%; nonpositive income |
| Log monthly contract rent | continuous |
| Years in the unit | under 2; 2–5; 5–10; 10 or more |
| Year built | before 1960; 1960–79; 1980–99; 2000 or later |
| Housing adequacy | adequate; moderately inadequate; severely inadequate |
| HUD subsidy | unassisted; Housing Choice Voucher; public or multifamily |
| Census division | nine divisions |
| Metropolitan status | named metro area; other metro; non-metro |

*Notes:* Data are renter-occupied units in the 2017 AHS (U.S. Census Bureau, 2018). The table lists the tenant and unit characteristics entered in the controlled columns of Table 7, Panel C, all measured for the current unit. Categorical controls enter as indicators for the categories listed, the first of which is the omitted base. Rent burden is annualized contract rent over household income, entered in bands.

Table C.5: Summary statistics: 2017 AHS estimation sample

| | Mean | SD | Min | Max | *N* |
|---|---|---|---|---|---|
| Missed rent, last 3 months (%) | 6.7 | 24.9 | 0 | 100 | 21,299 |
| Threatened with eviction \| missed (%) | 16.9 | 37.5 | 0 | 100 | 1,466 |
| Received eviction notice \| missed (%) | 3.7 | 18.9 | 0 | 100 | 1,470 |
| Small/individual landlord (%) | 55.3 | 49.7 | 0 | 100 | 21,299 |
| Large, owner/mgr on-site (%) | 11.0 | 31.3 | 0 | 100 | 21,299 |
| Large, absentee (%) | 33.8 | 47.3 | 0 | 100 | 21,299 |
| Householder age (years) | 44.9 | 16.9 | 16 | 85 | 21,299 |
| Female householder (%) | 53.2 | 49.9 | 0 | 100 | 21,299 |
| Black householder (%) | 22.1 | 41.5 | 0 | 100 | 21,299 |
| Hispanic householder (%) | 20.2 | 40.1 | 0 | 100 | 21,299 |
| Bachelor's degree or more (%) | 27.4 | 44.6 | 0 | 100 | 21,299 |
| Household size | 2.4 | 1.5 | 1 | 17 | 21,299 |
| Children present (%) | 32.0 | 46.7 | 0 | 100 | 21,299 |
| Below poverty line (%) | 22.8 | 41.9 | 0 | 100 | 21,299 |
| Monthly rent ($) | 1,069 | 914 | 4 | 10,700 | 21,299 |
| Rent burden (% of income) | 59.2 | 134.1 | 1 | 1,059 | 20,670 |
| Rent burden above 30% of income (%) | 40.2 | 49.0 | 0 | 100 | 21,299 |
| Years in unit | 4.5 | 6.5 | 0 | 86 | 21,299 |
| HUD-assisted (%) | 10.9 | 31.2 | 0 | 100 | 21,299 |
| Moderately/severely inadequate unit (%) | 7.1 | 25.7 | 0 | 100 | 21,299 |

*Notes:* Data are renter-occupied units in the 2017 AHS (U.S. Census Bureau, 2018) with a response to the missed-rent item, the estimation sample of the observability regressions of Table 7, Panel C. The landlord classes are defined in Section 4.4 and the missed-rent, threat, and notice items above. The threat and notice rows condition on having missed rent. Means and standard deviations use the survey weight; minima, maxima, and counts are unweighted. Rent burden is annualized contract rent divided by household income, computed for households with positive income and winsorized at the 1st and 99th percentiles. The share above 30%, the HUD cost-burden threshold, is computed before winsorizing. The regressions enter rent burden in the bands of Table C.4. HUD-assisted combines public or multifamily housing and Housing Choice Vouchers, inadequate units are those the survey classes as moderately or severely inadequate, and below poverty is household income under 100% of the poverty line.