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Sticky Wages on the Layoff Margin†

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We design and field an innovative survey of unemployment insurance (UI) recipients that yields new insights about wage stickiness on the layoff margin. A majority of UI recipients would accept pay cuts of 5–10 percent to save their jobs, and one-third would accept a 25 percent cut. Yet worker-employer discussions about cuts in pay, benefits, or hours in lieu of layoffs are exceedingly rare. Roughly one-quarter of the layoffs in our sample violate the theoretical condition for bilaterally efficient separations. We draw on our findings and other evidence to assess theories of wage stickiness and its role in layoffs. (*JEL* C83, E24, J31, J63, J65)

We design and field an innovative survey of unemployment insurance (UI) recipients that yields new insights about wage rigidity on the layoff margin. Specifically, we ask new UI recipients about their willingness to accept wage cuts to save their lost jobs, whether they had discussions with their former employers about compensation cuts in lieu of job loss and, if not, why not. Our survey went to field in the state of Illinois from September 2018 to July 2019, a period characterized by unusually low inflation and tight labor markets.

The majority of UI recipients in our sample express a willingness to accept wage cuts of 5–10 percent to save their lost jobs, and one-third are willing to take a 25 percent cut. Yet worker-employer discussions about cuts in pay, benefits, or hours to prevent layoffs almost never happen in our sample. When asked why, nearly 4 in 10

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UI recipients do not know. Thirty-six percent think wage cuts would not save their jobs, and 16 percent say pay cuts would undermine morale or lead the best workers to quit. For the 15 percent of our sample who lost union jobs, 45 percent say contractual restrictions prevent wage cuts.

When UI recipients refuse our proposed wage cuts to save their jobs, we ask why. Among those who experienced permanent layoffs (four-fifths of our sample), half point to better outside options, 38 percent regard the proposed pay cut as insulting, and one-fifth prefer unemployment to working at the lower wage. Among those on temporary layoff, the most common reason for refusing a hypothetical wage cut is fear it might become permanent.

Our finding that employers do not offer pay cuts in lieu of layoffs is broadly consistent with evidence from employer surveys.[1] While we draw inspiration from these studies, our worker-side survey offers distinct insights and advantages. First, it reveals that a majority of new UI recipients would accept wage cuts in lieu of layoffs, and many are open to large wage cuts. Employer reluctance to offer wage cuts becomes more puzzling in the face of widespread worker willingness to accept them. Second, our survey approach lets us explore worker perceptions about why employers do not offer pay cuts to save jobs. Many simply do not know. Third, employer-side surveys of wage-setting behavior typically involve small samples compiled by cold-calling firms and snowball sampling (Bertheau et al. 2022 is a notable exception.) In contrast, our sample frame is precisely defined, and our sample design lends itself to a systematic, institutionalized approach with ongoing surveys.

To our knowledge, we are the first to document the disjunction between worker-side openness to wage cuts and a widespread unwillingness of employers to broach the subject. We can discard a few possible explanations for this disjunction. First, less than 3 percent of respondents point to minimum wage and benefit laws to explain why discussions about compensation cuts don't happen. Second, we ask specifically about lower pay for 12 months to save the lost job. Thus, worker-side openness to wage cuts does not reflect an intention to seek and quickly take a better-paying job. Third, job losers in our sample rarely experience pay cuts in the months leading up to layoffs. That is, we see almost no indication that employers try job-saving wage cuts before resorting to layoffs.

By targeting UI recipients, our sample frame and survey data let us develop new insights about sticky wages on the layoff margin. If sticky wages cause some workers to lose jobs and obtain UI benefits, our frame captures them. On the flip side, our frame selects against jobs that survive negative shocks by virtue of downward wage adjustments. Thus, we cannot use our sample to quantify the broader incidence of job-preserving downward wage adjustments. That said, only 3 percent of UI recipients report discussions about compensation cuts to prevent layoffs. If employer-worker discussions about wage cuts to save jobs were common, we would expect those discussions to succeed in some instances and fail in others. The failures would show up in our sample. That so few do indicates that

[1] See, for example, Blinder and Choi (1990); Campbell and Kamlani (1997); and Bewley (1999).

discussions about job-preserving wage cuts rarely happen for the types of workers who collect UI benefits.

Many leading theories of job separations, frictional unemployment, wages, and job ladders adopt two assumptions. First, employment relationships are strictly bilateral in the sense that the relationship's continuation value is uninfluenced by the inputs, preferences, and compensation of anyone else who works for the same employer. Second, the employer and worker are identically informed about the continuation value and the value of each party's outside options. Influential theories that adopt these two assumptions include Mortensen and Pissarides (1994); Burdett and Mortensen (1998); Ljungqvist and Sargent (1998); Hall (2005); and Cahuc, Postel-Vinay, and Robin (2006).

Taken together, these assumptions imply that no layoff (or quit) occurs if there exists a current wage such that each party wants to continue the employment relationship. *Moreover*, the existence and value of such a wage is independent of whether the employer has other workers and what it pays them. We use our survey data to assess this implication directly, one layoff at a time. Specifically, we look for job-saving pay cuts that are small enough to be acceptable to the job loser *and* large enough to save the job. About one-fourth of the layoffs in our sample meet both criteria. That is, a sizable share of layoffs violate the bilateral condition for efficient separations that holds in many leading theories.

To our knowledge, we are the first to propose and implement this type of direct evaluation of the efficient layoff condition in a major class of theories. The main weakness in our implementation is its reliance on worker perceptions of whether a given pay cut is large enough for the employer to continue the relationship. We explain how to remedy this weakness using a richer sample design.

Other theories retain a focus on bilateral relationships but allow for private information about the value of outside options and the value of the worker's product to the employer. Examples include Hall and Lazear (1984) and Perry and Solon (1985). These theories give rise to sticky wages and rationalize layoffs that violate the bilateral condition for privately efficient separations. They also explain why employers don't offer pay cuts in lieu of layoffs when only the employer sees a shock that reduces the value of the worker's product. Our data do not yield a direct test of these theories, but some of our findings (and other research) suggest that wage stickiness on the layoff margin involves more than private information in bilateral relationships, as we discuss.

The next section expands on the motivation for our study. Section II describes our survey, reports summary statistics, and offers evidence on the quality of the data. Section III documents the willingness of UI recipients to accept job-saving wage cuts and the dearth of discussions about pay cuts to save jobs. Section IV explores worker perceptions about the reasons for sticky wages on the layoff margin and why many job losers refuse wage cuts. It also quantifies the share of layoffs that violate the bilateral condition for privately efficient separations. Section V draws on our evidence to assess the efficient separations view and theories that stress private information in bilateral employment relationships, considers other explanations for sticky wages on the layoff margin, and distills lessons from cases studies and complementary employer-side survey data. Section VI concludes.

I. Motivation and Related Research

An important motivation for our study is the prominent role of wage stickiness in Keynesian theories of economic fluctuations, unemployment, and stabilization policy.[2] Taylor (1999) surveys older empirical research on nominal wage stickiness, and we discuss more recent research below. These studies document the extent and nature of wage stickiness and offer insight into its underlying sources. A recurring issue is whether, and how much, the stickiness in observed wages matters for employment, hours, and effort. Barro (1977), for example, explains how long-term employment relationships can give rise to sticky wages and an "apparent nonwage rationing of jobs," even as the contractual employment rule equates the value of labor's product to the value of the worker's time. Our survey yields direct evidence on the value of worker time and how it relates to the wage on lost jobs.

A second motivation is the long-standing question of whether downward wage stickiness is an important source of privately inefficient separations. Stickiness in flow wages need not involve inefficient separations, as highlighted in the analyses of Becker (1962) and Barro (1977). Yet the literature also recognizes that private information, morale effects, adverse selection in quits, pay equity concerns, collective bargaining, and insider-outsider conflicts can give rise to wage rigidities that generate inefficient separations.[3] Thus, theoretical considerations alone cannot tell us whether sticky wages are a source of inefficient layoffs. That leads us to explore whether wage concessions could prevent some layoffs. It also motivates complementary work by Jäger, Schoefer, and Zweimüller (2023), who devise an ingenious test of the efficient-separations hypothesis.

Our work also relates to a large literature that uses micro data to document the frequency and nature of wage adjustments over time. Many survey-based studies find substantial downward nominal wage rigidity.[4] Studies that rely on payroll records find a higher incidence of outright nominal wage cuts, especially when looking beyond base pay.[5] Taken as a whole, more recent work undercuts an older view that nominal pay cuts are rare in ongoing employment relationships. Very few previous studies, however, tell us whether wages are flexible enough to prevent inefficient layoffs. Our survey data let us address this issue for an important population, namely, the types of workers who collect UI benefits.

Experimental studies find evidence of downward wage rigidity in the sense that firms choose to pay wages that exceed outside options and that wage premia are resistant to underbidding by the unemployed. See Fehr and Falk (1999), for example, who stress the role of hard-to-observe effort and the resulting contract incompleteness as a source of downward wage rigidity that survives even in highly

[2] Leading examples include Keynes (1936); Tobin (1972); Fischer (1977); Taylor (1980); Erceg, Henderson, and Levin (2000); Smets and Wouters (2003); Woodford (2003); Christiano, Eichenbaum, and Evans (2005); and Gali (2011). A related literature stresses inflation's role in "greasing the wheels of the labor market," as in Akerlof, Dickens, and Perry (1996); Card and Hyslop (1997); and Schmitt-Grohé and Uribe (2013, 2016).

[3] We discuss these theories below. That some job losers suffer large, persistent earnings losses adds to the interest in theories of wage rigidity. For evidence, see Jacobson, LaLonde, and Sullivan (1993); Davis and von Wachter (2011); and Krolikowski (2018), among others.

[4] Examples include Card and Hyslop (1997); Kahn (1997); and Dickens et al. (2007). Blinder and Choi (1990) and McLaughlin (1994) find less downward rigidity.

[5] See, for example, Elsby, Shin, and Solon (2016) and Grigsby, Hurst, and Yildirmaz (2021).

competitive settings. Both experimental and survey-based lines of inquiry suggest that concerns about fairness, reciprocity, and motivation can lead to wage rigidity on the layoff margin and inefficient separations.

II. Our Survey of Unemployment Insurance Recipients

We now describe the major elements of our survey, report response rates and summary statistics, review labor market conditions at the time of the survey, and offer some evidence on the internal validity of responses to key survey questions. We provide more information about the survey and describe our data-cleaning methods in online Appendix A. Our replication package presents the survey invitations and questionnaires in full (Davis and Krolikowski 2024).

A. *Sample Frame and Sampling Design*

Our sample frame covers persons who began collecting UI benefits in the state of Illinois from September 10 to November 18 in 2018, excluding about 12 percent of benefit recipients with no email address on file at the Illinois Department of Employment Security (IDES). All persons in the sample frame received an email invitation to participate in our online Entry Survey, typically one business day after their first UI benefit payment. If the respondent completed the Entry Survey (and permitted further contact), we sent invitations to take part in one or two Follow-Up Surveys. The last follow-up wave went to field in July 2019.

IDES encourages job losers to file an initial claim for UI benefits in the calendar week after job loss (IDES 2017). The first full week of unemployment is not eligible for benefits. The second full week is eligible, provided the individual's claim is certified. Certified claimants receive benefit payments the week after each benefits-eligible week. Thus, invitations to our Entry Survey typically arrive 18 to 28 days after job loss, although it can be longer due to delays in filing or processing claims. Respondents received a $10 Amazon gift card for taking the survey, except during the first week of Entry Survey invitations (September 10 to 14), during which they received $5.[6]

Our Entry Survey asks about demographic characteristics, the lost job, willingness to accept pay cuts in lieu of layoff, whether there were discussions about compensation cuts in lieu of layoff, the reasons for employer reluctance to offer such deals, desired attributes in a new job, reservation wages, and more (see online Appendix A.4). We tailor the questionnaire for permanent and temporary layoffs based on responses to the question: "Do you expect to be recalled to your previous job within the next 6 months?" We ask new UI recipients to respond within two days of receiving the survey invitation. In practice, about half of Entry Survey participants respond within two days, and most of the rest do so within two weeks.[7]

[6] After this first week, IDES paused sending out invitations for one week to give us time for evaluation. We decided to raise the Entry Survey incentive from $5 to $10 to increase completion rates, as discussed in online Appendix A.3.

[7] Most invitations to the Entry Survey went out 18–28 days after job loss, or 23 days at the midpoint. The median unemployment duration in our Entry Survey sample is 3.6 weeks, or 25.2 days, which implies a median response lag of about 2 days. We observe response lags directly for the Follow-Up Surveys and find that 90 percent (95 percent) of participants respond to the first (second) follow-up invitation within 2 weeks.

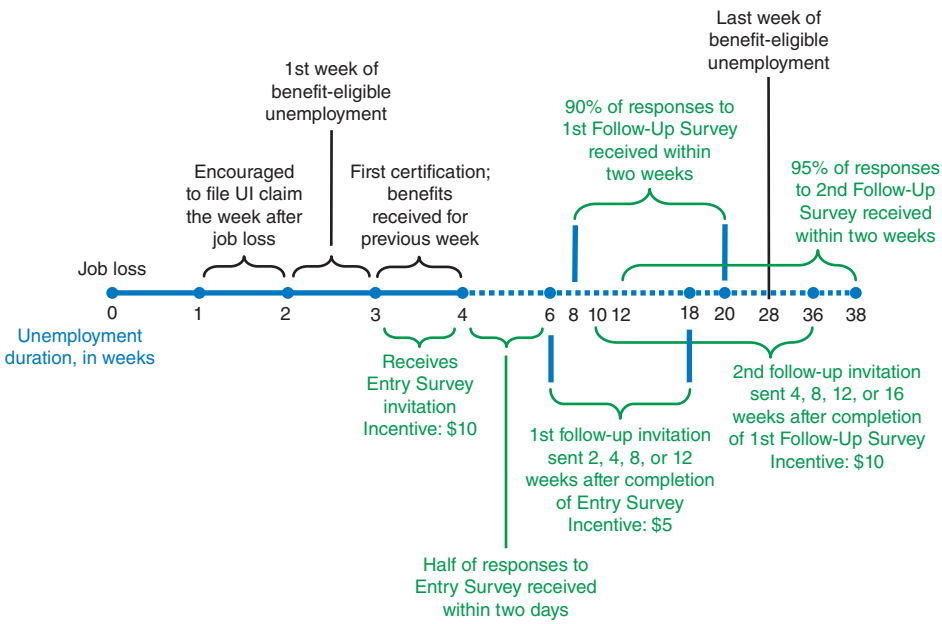

Figure 1. Survey Timing in Relation to Job Loss and Unemployment Spell

Invitations for the first Follow-Up Survey went to field 2, 4, 8, and 12 weeks (randomized) after completing the Entry Survey, and invitations for the second went to field 4, 8, 12, and 16 weeks after completing the first follow-up.[8] Respondents received a $5 Amazon gift card for participating in the first follow-up and $10 for the second. We tailor the follow-up questionnaires based on whether the respondent returned to their prior job, took a new job, was self-employed, or still without work. Depending on employment status, the follow-ups probe job search activity, reservation wages, attributes of the current job, compensation on the current job, and more. Figure 1 summarizes our survey timing and illustrates its relationship to the layoff date and unemployment spell.

B. *Response Rates and Survey Completion Times*

We distributed 30,571 invitations for our Entry Survey and received 2,777 completed responses, a 9.1 percent response rate, as reported in online Appendix Table A1 and similar to that of Krueger and Mueller (2011). Completion rates for the first Follow-Up Survey ($5 incentive) ranged from 64 percent for waves fielded 2 weeks after completion of the Entry Survey to 51 percent for waves fielded 12 weeks afterward. Completion rates for the second Follow-Up Survey ($10 incentive) ranged

[8] We randomize intervals between surveys to disentangle unemployment spell duration and calendar time effects from the possible effects of repeat applications of the survey instrument. On this point, see Krueger and Mueller (2011) and Davis (2011). Online Appendix A.5 provides details.

from 85 percent for waves fielded 2 weeks after completion of the first follow-up to 74 percent for waves fielded 16 weeks afterward.

All told, we received 5,484 completed responses, and 1,203 persons completed all 3 surveys. Our analysis samples consider persons with nonmissing information about schooling, gender, age, tenure on the lost job, and at least one earnings observation. Online Appendix A.6 covers response coding, treatment of extreme values, and measurement of ongoing spell durations. The mean completion time for the Entry Survey is nine minutes, and the median is eight minutes. The mean (median) completion time for the Follow-Up Surveys is four (three) minutes. These short completion times reflect our efforts to design short, highly focused survey instruments to encourage higher response rates and accurate responses.

C. *Labor Market Conditions at the Time of the Survey*

The seasonally adjusted unemployment rate in Illinois was about 4.5 percent from September to November 2018, as shown in online Appendix Figure A1. The national unemployment rate was even lower, consistent with a labor market operating at or near full employment. Inflation was low, at about 2 percent per year, and had been so for many years. The average replacement rate for unemployment benefit recipients in Illinois was 39 percent, somewhat lower than in most other states (online Appendix Figure A2).

D. *Selected Summary Statistics*

Table 1 reports summary statistics for our Entry Survey sample, for newly unemployed job losers in the Current Population Survey (CPS 2019), and for continuing claimants in Illinois (DOLETA 2024). Relative to these sources, the Entry Survey sample tilts toward job losers who last worked in manufacturing. To a lesser extent, it tilts toward women and away from construction. In other respects, the Entry Survey sample differs only modestly from one or both sources. For example, it tilts strongly away from Black people relative to continuing claimants but only modestly so relative to the CPS.

Relative to the CPS, the tilt to manufacturing partly reflects high unionization in that sector plus union efforts to raise UI take-up rates (Blank and Card 1991). Relative to continuing claimants, the tilt to manufacturing partly reflects a concentration of temporary layoffs in that sector. Because unemployment spells tend to be shorter for temporary layoffs than for permanent job losers, temporary layoffs are less common among continuing claimants than in our target population of (certified) initial claimants.

Mean unemployment duration in our Entry Survey sample is about 5 weeks, and the median is 3.6 weeks. Ninety percent of Entry Survey participants have unemployment spell durations of less than 10 weeks when they complete the survey. Online Appendix Figure A3 presents a full histogram of unemployment spell durations among Entry Survey respondents.

It's worth reiterating that we sample a population of UI benefit recipients rather than all job losers or all persons who meet the CPS criteria for unemployment due to job loss or temporary layoff. Our population is the relevant one for issues that

Table 1—Entry Survey Analysis Sample: Percent Distributions and Comparisons to Newly Unemployed Job Losers in the CPS and to All Continuing Claimants in Illinois

	DK unweighted (1)	DK weighted (2)	CPS (US) (3)	Continuing claimants (IL) (4)
Previous industry (*percent*)				
Leisure and hospitality	6.3	6.6	12.5	6.9
Finance, insurance, real estate	9.4	7.9	4.4	5.6
Construction	5.3	7.4	14.1	10.5
Education and health care services	16.7	12.6	17.5	10.4
Information and other services	9.3	8.4	5.9	4.8
Manufacturing	20.1	25.7	8.6	13.4
Mining	0.3	0.4	0.6	0.1
Prof., technical, business services	12.1	8.9	13.5	22.0
Retail and wholesale trade	9.2	9.9	11.2	13.8
Transp., warehousing, utilities	6.1	7.2	5.8	4.9
Government or military	1.0	1.0	2.4	2.2
Agriculture, forestry, fishing	1.5	1.7	3.7	0.4
Data missing	2.6	2.4	0.0	5.2
Demographic data (*percent of total*)				
Female	52.4	42.5	43.1	46.7
Age in years				
18–24	6.2	7.9	18.1	4.8
25–34	26.3	29.0	24.1	21.9
35–44	22.8	24.5	19.1	23.3
45–54	22.6	20.1	17.4	23.6
55–64	19.2	15.8	14.3	21.2
65 or older	3.0	2.6	6.9	5.2
Race/ethnicity				
White, non-Hispanic	63.3	61.1	51.3	57.8
White, Hispanic	5.2	5.7	21.0	
Black	16.6	18.0	20.1	28.8
Asian	3.4	2.4	2.9	2.5
Other	4.7	5.4	4.6	0.8
Data missing	6.9	7.3	0.0	10.1
Education				
High school diploma	13.7	21.0	35.4	
Technical training/some college	28.2	40.9	21.4	
Associate's/bachelor's degree	41.0	29.1	19.3	
Graduate degree	16.2	7.7	7.1	
Mean unemployment duration (*weeks*)	5.3	5.1	2.5	
Observations	2,567	2,567	3,820	240,612

Notes: Column 1 reports raw percentages for the Entry Survey analysis sample, and column 2 reports percentages after reweighting to match the CPS, as described in online Appendix A.7. Column 3 reports the corresponding US percent distributions for newly unemployed job losers in the CPS for the period from June 2018 to February 2019, which spans our sample period plus three months on either side. Education categories sum to less than 100 because not all categories are listed. Column 4 reports percentages for continuing unemployment insurance claimants in Illinois from September to November 2018. Breakdowns by education and Hispanic heritage are unavailable for continuing claims. "DK" stands for Davis and Krolikowski. See Section IID for more information.

pertain to the design of the UI system and its consequences, including any effects of wage stickiness on the incidence, costs, and benefits of UI payments.[9] It's also worth noting that the tenure distribution of lost jobs covered by our Entry Survey (and of newly unemployed job losers in the CPS) is left shifted relative to the tenure

[9]The literature on these topics is voluminous. Review articles include Meyer (1995); Schmieder and von Wachter (2016); and Chodorow-Reich and Coglianese (2019).

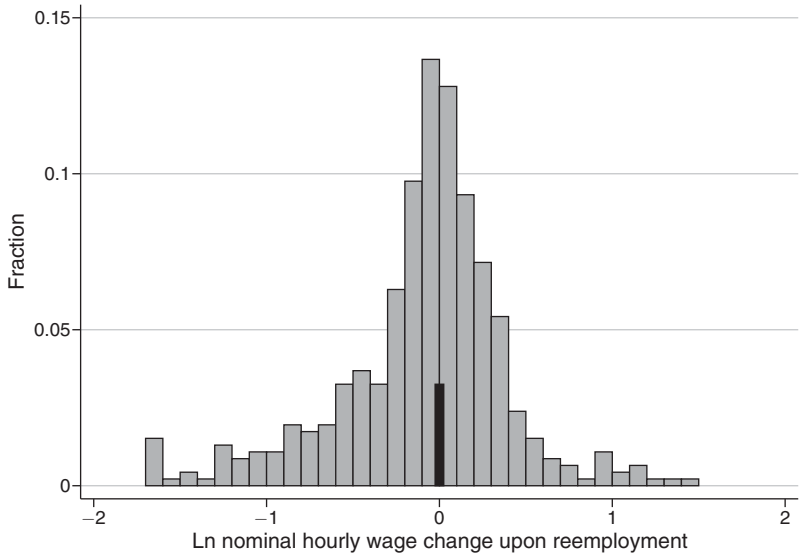

FIGURE 2. THE DISTRIBUTION OF WAGE CHANGES FOR REEMPLOYED JOB LOSERS

Notes: This figure presents the histogram of wage changes for respondents who experienced a permanent layoff and found a new job in the time frame covered by our survey. The wage change measure is the natural log of the ratio (nominal hourly wage on the new job)/(nominal hourly wage on the lost job). We drop observations with hourly or reservation wages below \$2 or above \$200 and then winsorize at the first and ninety-ninth percentiles of the log wage changes. The width of each bin is 0.1 except for the solid black bar, which denotes no wage change at reemployment. The mean (median) of the natural log of the wage ratio is −0.068 (−0.016). See Section IIE for more information.

distribution in ongoing employment spells (online Appendix Table A2). This pattern is no surprise, but it should be kept in mind when thinking about the character of our sample. It arises because separation rates fall with job tenure.

E. *Internal Validity Checks and Predictive Content*

A key methodological issue is whether our survey approach yields meaningful data on perceived labor market opportunities and the willingness to accept pay cuts. To address this issue, we first consider how reservation wages relate to realized reemployment wages and, second, how the willingness to accept pay cuts relates to both reservation wages and reemployment wages.

For respondents who find new jobs during the time frame covered by our survey, we measure the reemployment wage ratio as the wage on the new job divided by the wage on the lost job. Figure 2 presents the resulting distribution of (natural) log reemployment wage ratios. It shows wide dispersion, with many workers experiencing large wage gains or losses. The mean reemployment wage ratio is −7 log points, and the median is −2 log points. The new job pays exactly the same as the old job in fewer than 4 percent of cases.

We elicit reservation wages in the Entry Survey by asking, "Suppose someone offered you a job today that is suitable in terms of hours, skills, responsibilities and

nonwage benefits. What is the lowest wage or salary, before taxes and deductions, you would accept? Please include in this amount any bonuses, overtime pay, tips or commissions that you would expect." The respondent specifies the pay period (hourly, biweekly, twice monthly, monthly, annually) and the pay amount per period. Dividing the response by the wage on the lost job gives the reservation wage ratio. A linear regression of the log reemployment wage ratio on the log reservation wage ratio yields an estimated elasticity of 0.78 (0.07).[10] Thus, reservation wages shortly after job loss covary strongly and positively with realized wages on new jobs. We see this finding as clear evidence that reported reservation wages capture useful information about labor market opportunities.

To gauge openness to pay cuts, we ask permanently laid off job losers, "Would you have been willing to stay at your last job for another 12 months at a pay cut of X percent?" We randomize X over 5, 10, 15, 20, and 25. As reported in Table 2, the mean log reservation wage ratio is -11 log points for those who accept pay cuts and $+4$ log points for those who reject them (panels A and B, column 1.2). This difference is statistically significant at the 99.9 percent confidence level, both overall and when grouping the data by size of proposed pay cuts (panel C, column 1.3). Moreover, the mean reservation wage ratio falls with the size of the proposed pay cut among those who accept pay cuts, and these differences are significant at the 95 percent level (panel C, column 1.3). Likewise, reemployment wage ratios are smaller, on average, for those who accept pay cuts than for those who reject them. This difference is statistically significant at the 95 percent level (panel C, column 2.3), despite the modest sample sizes. And job losers who say they would accept proposed pay cuts do, in fact, experience mean wage drops on their new jobs (panel A, column 2.2).[11]

In summary, respondents who accept hypothetical pay cuts have lower reservation wage ratios than those who reject pay cuts, and they experience lower reemployment wage ratios. Moreover, those who accept larger pay cuts have lower reservation wage ratios and lower reemployment wage ratios than those who accept smaller pay cuts. Reservation wages are also highly predictive of reemployment wages. Finally, we will show in Section IIIB that residuals from a standard wage regression are powerful predictors of the willingness to accept job-saving pay cuts. These results indicate that our survey yields meaningful data on the labor market opportunities of unemployment benefit recipients and on their willingness to accept pay cuts to save their lost jobs.

III. The Willingness to Accept Pay Cuts to Save Jobs

We now quantify the willingness to accept pay cuts and characterize how it varies with observable attributes of workers, jobs, and employers. We also document a striking disjunction between openness to wage cuts among job losers and the absence of discussions about wage cuts to save jobs.

[10] One might worry that this elasticity estimate suffers from division bias since we use the wage on the lost job as a scaling variable on both sides of the regression. When we instead regress the log reemployment wage on the log reservation wage, we obtain an elasticity estimate of 0.84 (0.04). Online Appendix Figure A4 presents the corresponding scatterplots.

[11] Those who say yes to larger proposed pay cuts experience larger pay cuts upon reemployment (panel A, column 2.2), but these differences are not statistically significant.

Table 2—Reservation and Reemployment Wage Ratios, UI Recipients on Permanent Layoff

	(1) log reservation wage ratio			(2) log reemployment wage ratio		
	(1.1) Obs.	(1.2) Mean	(1.3) *p*-values	(2.1) Obs.	(2.2) Mean	(2.3) *p*-values
Panel A. Workers who accept pay cuts						
Accept 5% wage cut	235	−0.09	< 0.001	57	−0.077	0.30
Accept 10–15% wage cut	390	−0.10	< 0.001	84	−0.106	0.09
Accept 20–25% wage cut	291	−0.15	< 0.001	59	−0.20	0.007
Accept wage cut of any size	916	−0.11	< 0.001	200	−0.12	0.002
Panel B. Workers who reject pay cuts						
Reject 5% wage cut	150	0.048	0.046	41	−0.11	0.14
Reject 10–15% wage cut	416	0.051	< 0.001	93	0.046	0.35
Reject 20–25% wage cut	530	0.025	0.046	127	−0.054	0.21
Reject wage cut of any size	1,096	0.038	< 0.001	261	−0.027	0.37
Panel C. Hypothesis tests						
Same wage ratio for those who accept and reject pay cuts	2,012		< 0.001	461		0.046
Same wage ratio for those …by size of pay cut	2,012		< 0.001	461		0.073
Same wage ratio across pay cut categories: Accepts	916		0.05	200		0.47
Same wage ratio across pay cut categories: Rejects	1,096		0.37	261		0.15
Panel D. Full-sample summary statistics						
Mean	2,012	−0.031		461	−0.069	
Standard deviation	2,012	0.297		461	0.520	

Notes: Data on lost-job wages and reservation wages are from the Entry Survey, which UI benefit recipients are invited to take one business day after receiving their first benefit payment. The reservation wage question is "Suppose someone offered you a job today that is suitable in terms of hours, skills, responsibilities and nonwage benefits. What is the lowest wage or salary, before taxes and deductions, you would accept?" The wage cut question is "Would you have been willing to stay at your last job for another 12 months at a pay cut of *X* percent?" The reemployment wage is from the Follow-Up surveys. All *p*-values are for two-sided tests of the nulls. We drop observations for which the hourly wage on the lost job or the reservation wage is below $2 or above $200. We then winsorize log wage ratios at the first and ninety-ninth percentiles. See Section IIE for more information.

A. *Evidence for Hypothetical Pay Cuts*

Table 3 presents evidence on the willingness to accept pay cuts to save jobs. Sixty percent of UI recipients on permanent layoff say they would accept a pay cut of 5 percent to keep their previous jobs, and more than half would accept a 10 percent cut. Remarkably, one-third would accept a pay cut of 25 percent. Among UI recipients on temporary layoff, 55 percent would accept a 5 percent cut to keep working, and more than one-third would accept a cut of 20 or 25 percent. In short, the majority of workers would accept small pay cuts to save lost jobs, and one-third would accept cuts of 25 percent. These results hold in an economy that operated at or near full employment. Presumably, the willingness to accept pay cuts is even greater in a weaker economy.

Given our question design, the willingness of most UI recipients to accept pay cuts cannot be rationalized by the option value of search while employed. For persons on permanent layoff, we ask specifically about willingness to accept lower pay "for another 12 months." Thus, a respondent who accepts our proposed pay cut

Table 3—Percent of UI Recipients Who Would Accept a Pay Cut to Save the Lost Job

Size of proposed pay cut	5%	10%	15%	20%	25%
Permanent layoffs	60.6	52.3	43.7	38.4	32.4
	(2.4)	(2.5)	(2.5)	(2.4)	(2.3)
	404	413	410	419	423
Temporary layoffs	54.5	42.9	35.8	34.3	37.4
	(5.0)	(5.0)	(4.9)	(4.7)	(4.9)
	101	98	95	102	99

Notes: For each type of layoff, we order the rows as follows: percent of UI recipients who say they would accept the proposed wage cut, the standard error of the estimate, and the number of observations. See Section IIIA for more information.

Question for permanent layoffs: "Would you have been willing to stay at your last job for another 12 months at a pay cut of *X* percent?"

Question for temporary layoffs: "Suppose your employer offered a temporary pay cut of *X* percent as an alternative to the temporary layoff. Would you have been willing to accept the temporary pay cut to avoid the layoff?"

is not expressing an intention to quickly seek and find another job while working (at lower pay) on the lost job. Accordingly, we see the results in Table 3 as direct evidence that the wage on the lost job exceeds the value of worker time for most UI recipients. For one-third of UI recipients, the wedge between the wage on the lost job and the value of time is at least 25 percent of the wage.

The first two columns in Table 4 present evidence on how the willingness to accept wage cuts varies with observables. Not surprisingly, there is less willingness to accept larger pay cuts. Respondents on permanent layoff are 28 percentage points less likely to accept a 25 percent cut than a 5 percent cut, conditional on controls. We find no statistically significant evidence that openness to pay cuts differs between men and women, rises with unemployment duration, or varies by educational attainment or experience. However, hourly workers on permanent layoff are 8 percentage points less likely to accept wage cuts, conditional on other controls. Persons with less than six months of tenure on lost jobs are more open to pay cuts.

One demographic characteristic stands out in Table 4: Black job losers are 11–12 percentage points more likely to accept pay cuts than White job losers. This is a large effect. It is statistically significant at the 1 percent level for permanent layoffs and at the 10 percent level for temporary layoffs. This finding aligns well with other evidence that Black people have less financial wealth and, as a result, exhibit greater sensitivity of consumption expenditures to income shocks. See Ganong et al. (2020) and their references to the literature. Insofar as job loss brings bigger consumption drops for Black people, it makes sense that they are more willing to accept pay cuts to save jobs. That is what we find.

Would the respondents have exhibited the same openness to pay cuts at the time of layoff? Perhaps the layoff experience and ensuing unemployment spell alter perspectives, attitudes, and preferences in a manner that influences openness to pay cuts. We cannot rule this out, but two observations speak to this concern. First,

Table 4—How the Willingness to Accept Pay Cuts Varies with Observables

Type of Layoff →	Permanent (1)	Temporary (2)	Permanent (3)	Temporary (4)
Proposed pay cut				
10%	−0.09	−0.14	−0.09	−0.16
	(0.04)	(0.07)	(0.04)	(0.07)
15%	−0.18	−0.18	−0.17	−0.21
	(0.04)	(0.07)	(0.03)	(0.07)
20%	−0.24	−0.19	−0.23	−0.21
	(0.04)	(0.07)	(0.03)	(0.07)
25%	−0.28	−0.19	−0.28	−0.19
	(0.04)	(0.07)	(0.03)	(0.07)
Individual characteristics				
Female	0.01	0.04	0.01	0.02
	(0.02)	(0.05)	(0.02)	(0.05)
Black	0.12	0.11	0.12	0.12
	(0.03)	(0.06)	(0.03)	(0.07)
Experience	0.01	−0.01	0.01	−0.01
	(0.00)	(0.01)	(0.00)	(0.01)
Experience^2	−0.00	0.00	−0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Tenure on the lost job				
6 mos to 2 yrs	−0.08	−0.06	−0.08	−0.08
	(0.03)	(0.06)	(0.03)	(0.07)
2 yrs to 5 yrs	−0.08	−0.06	−0.08	−0.05
	(0.04)	(0.08)	(0.04)	(0.09)
More than 5 yrs	−0.05	−0.21	−0.05	−0.17
	(0.04)	(0.07)	(0.03)	(0.07)
Other variables				
Paid hourly (Yes = 1)	−0.08	−0.03	−0.08	−0.03
	(0.03)	(0.05)	(0.03)	(0.05)
Weeks unemployed	−0.00	0.00	−0.00	0.00
	(0.00)	(0.01)	(0.00)	(0.01)
Rent variables				
Industry wage premium			−0.10	0.77
			(0.40)	(1.15)
Union job (Yes = 1)			−0.02	−0.17
			(0.05)	(0.06)
Wage residual			0.12	−0.00
			(0.02)	(0.05)
Mean of dependent variable	0.46	0.38	0.46	0.38
Standard deviation of dep. var.	0.50	0.48	0.50	0.48
R^2	0.07	0.12	0.08	0.15
Observations	1,909	418	1,909	418

Notes: Dependent variable equals 1 if respondent accepts pay cut, 0 otherwise. We fit linear probability regression models by OLS. The models include the race/ethnicity and education indicators in Table 1, but we do not show the statistically insignificant ones. The omitted category is a non-Hispanic White man who has at most a high school diploma and who had less than six months of job tenure at layoff. Industry wage premia are from Stansbury and Summers (2020, online Appendix Figure A8). Wage residuals are from a Mincerian wage equation, as described in the text. Standard errors in columns 3 and 4 are computed by bootstrapping the Mincerian wage regression and the second-stage regression with 1,000 replications. Marginal effects at the mean in probit models are similar. See Sections IIIA and IIIB for more information.

because the median unemployment duration in our sample is 3.6 weeks, we catch most respondents before there is time for a long unemployment spell. Second, as reported in Table 4, we find no correlation between unemployment duration as of the survey response date and the willingness to accept pay cuts. There remains the possibility of an abrupt shift in openness to pay cuts from before to after the layoff event. We leave that matter for future research.

B. *Worker Rents and Willingness to Accept Pay Cuts*

It is natural to hypothesize greater openness to pay cuts among UI recipients who enjoyed greater rents on their lost jobs. To operationalize this hypothesis, we consider three distinct rent variables. The first is an indicator for whether the lost job was covered by a union contract, based on survey responses to "Was the job that ended on [date] covered by a union contract?" This variable is motivated by a large body of evidence that union jobs often pay wages that exceed what union members can earn in other jobs. See, for example, Freeman and Medoff (1984) and Lewis (1986).

Our second rent variable follows a large literature that interprets industry wage differentials among observationally similar workers as rents that arise because of fairness concerns, employer desires to deter shirking, and the sharing of profits with employees. Prominent contributions include Akerlof (1982); Bulow and Summers (1986); and Krueger and Summers (1988). To quantify industry-level worker rents, we use the wage premiums for 18 industries that Stansbury and Summers (2020, online Appendix Figure A8) estimate from CPS micro data. Their estimated log wage premiums range from 0 in Accommodations and Food Service to 0.26 in Mining. If these premiums reflect worker rents, we anticipate greater openness to job-saving pay cuts among workers who lost jobs in industries with higher premiums.

Our third rent variable is constructed as the worker-level residual in a standard Mincerian wage regression. Specifically, we obtain the residual from a regression of the lost-job log wage on a quadratic polynomial in potential experience (age minus years of schooling) and dummy variables for four levels of education, sex, six race/ethnicity categories, hourly pay on the lost job, and layoff status (permanent or temporary). This regression yields an R^2 value of 0.32. The standard deviation of the regression residual is 0.51.

Returning to Table 4, we add the rent variables to our statistical model for the willingness to accept pay cuts in columns 3 and 4. Previous results continue to hold, and two of the rent variables have material effects on openness to pay cuts. Workers on temporary layoff are 17 percentage points less likely to accept pay cuts to keep working if they hold a union job, conditional on other variables in the model. (An explanation for this result emerges in Section IVB when we probe why job losers refuse pay cuts.) In contrast, the estimated effect of union status on willingness to accept pay cuts is small and statistically insignificant for those on permanent layoff. We do not read this result as clear evidence that union status is inconsequential for openness to job cuts among those on permanent layoff, given the sizable standard error on the estimated effect. The lack of precision here reflects our modest sample size ($n = 71$) for union members on permanent layoff.

Surprisingly, we find no evidence that industry wage premiums help explain the willingness to accept job-preserving pay cuts. For permanent layoffs, the coefficient on the industry wage premium is wrong-signed relative to the hypothesized effect. This result is at odds with research that regards interindustry wage differentials as indicative of worker rents. Perhaps industry-level wage premiums are subsumed in, and better measured by, our worker-level wage residuals. To assess this possibility, we reestimated the column 3 specification in Table 4 after dropping the worker-level wage residuals. In this modified specification, the coefficient on the industry wage premium changes to 0.38 (standard error of 0.38). Thus, the modified specification also yields little evidence that industry-level wage premiums help explain the willingness to accept job-preserving pay cuts.

Lastly, we find strong evidence that permanently laid off workers with higher wage residuals are more open to job-preserving pay cuts.[12] The point estimate implies that an increase in the log wage residual of 2 standard deviations raises the willingness to accept a job-preserving pay cut by 12 percentage points $(2 \times 0.51 \times 0.12 \times 100)$. This estimate may understate the true impact of worker-level rents on the willingness to accept job-saving pay cuts if the simplicity of our wage model yields a noisy measure of rents.

While striking, the effect of residual wages on openness to pay cuts can arise for multiple reasons that correspond to different sources of rents. For example, in settings with job-search frictions, a high wage residual could reflect fortuitous circumstances that let the worker reap an unusually large share of the surplus generated by the employment relationship.[13] As another example, even when a worker's wage exceeds the value of his productivity, firing costs can lead an employer to forgo layoffs in the hope that productivity will improve or that the real wage will fall through inflation. In both situations, we expect individuals with higher wage residuals to be more open to job-preserving pay cuts. Fairness concerns and employer desires to deter shirking are other possible sources of worker rents. As yet another example, a high wage residual could reflect a history of high investments in match-specific capital before the shock(s) that triggered the layoff. Such investments can lead to a situation where the worker's pre-shock productivity value and wage on the lost job exceed his productivity value and wage on other jobs. In this example as well, we expect job losers with higher wage residuals to exhibit greater openness to job-saving wage cuts.

C. *The Rarity of (Discussions about) Pay Cuts to Save Jobs*

The willingness of workers to accept job-saving wage cuts is even more striking when coupled with our next finding: explicit discussions about cuts in pay, benefits, or hours in lieu of layoff are exceedingly rare. Overall, less than 3 percent of the job losers in our sample report discussions with their former employer about cuts in pay, benefits, or hours as an alternative to layoff. The rarity of such discussions holds

[12] Online Appendix Figure A5 presents a bin scatter of the pay cut acceptance share on the lost-job wage residual.

[13] This happens in the sequential bargaining setup of Cahuc, Postel-Vinay, and Robin (2006) when the worker has the good fortune to receive an outside job offer that is nearly as attractive in productivity terms as his existing job. The rebargaining triggered by the outside offer leaves the worker with most of the surplus.

across industries, job tenure categories, education categories, firm size categories, for union and nonunion workers, and by reason for layoffs. See Table 5. These discussions are rare even for job losers who express a willingness to accept large pay cuts. Moreover, job losers rarely experienced cuts in their pay, hours, or benefits in the months leading up to job loss, as discussed below.

Workers who lost jobs at small firms are somewhat more likely to have discussed possible cuts in pay, benefits, or hours in lieu of layoff, consistent with Bewley (1999, pp. 172–73). Job losers with longer tenures and those who attribute layoffs to slow business conditions are also more likely to have had such discussions. These patterns make sense because high-tenure workers are more likely to have accumulated match-specific human capital and because slow business conditions allow more room for discussion and negotiation than business closures or terminations for cause. That said, all of the between-group differences in Table 5 are modest in absolute terms. The key result remains the rarity of discussions about cuts in pay, benefits, or hours as an alternative to layoffs.

Actual pay cuts before job loss are also quite rare among UI benefit recipients. Figure 3 makes this point by displaying a histogram for the distribution of log hourly wage changes in the 12 months leading up to job loss. Fewer than 1.5 percent of job losers had a wage cut before their layoffs. More than half experienced no wage change in the 12 months before layoff, and 46 percent received a (nominal) wage increase.[14] The large spike at zero in Figure 3 is to be expected when nominal wages are sticky downward, given low inflation during our sample period and weak labor demand conditions for those soon to be laid off.

Among job losers with no wage change in the year leading up to layoff, 3 percent had benefit adjustments, and 3 percent had a change in earnings due to a change in hours worked. Another 12 percent experienced some other form of compensation adjustment, such as a change in bonuses or tips. Our data do not say whether the various nonwage adjustments were up or down, but they arose for only a small share of job losers.

To summarize, employer-worker discussions about cuts in pay, benefits, or hours as an alternative to layoffs are exceedingly rare in our sample of UI benefit recipients. Nominal pay cuts in the 12 months leading up to job loss are also rare. Thus, there is little evidence that employers try job-saving wage cuts first, before resorting to layoffs. These findings are especially striking in light of our evidence that about 60 percent of job losers express a willingness to accept modest pay cuts to save their jobs and one-third would accept pay cuts of 25 percent.

As remarked in the introduction, we cannot use our sample to quantify the incidence of job-saving pay cuts in the broader population of workers or employment relationships. Successful efforts to implement job-saving pay cuts are outside the scope of our frame. Nevertheless, our results support the claim that discussions about job-saving wage cuts are rare for the types of workers who collect UI benefits. In this regard, two observations: First, *unsuccessful* discussions about pay cuts to save jobs *are* captured by our sample frame. Such discussions are quite rare, as we have shown. It follows that successful discussions of this sort are many times more

[14] These results hold for job losers with one or more years of tenure at the time of layoff. Very similar results hold when restricting attention to persons with at least three years of tenure at the time of job loss.

Table 5—Percent of Respondents Who Discussed a Cut in Pay, Benefits, or Hours in Lieu of Layoff

	Mean	SE	Count
Overall	2.8	0.3	2,567
Type of layoff (*p-value: 0.03*)			
Permanent	2.4	0.3	2,070
Temporary	4.2	0.9	497
Gender (*p-value: 0.16*)			
Male	2.3	0.4	1,223
Female	3.2	0.5	1,344
Education (*p-value: 0.31*)			
High school grad.	3.7	1.0	352
Technical training/some college	2.2	0.5	724
Associate/bachelor's degree	3.1	0.5	1,052
Grad. degree or higher	1.9	0.7	416
Industry (*p-value: 0.79*)			
Leisure and hospitality	3.7	1.5	162
FIRE	2.5	1.0	241
Construction	2.2	1.3	136
Educ. and hlth. care services	2.3	0.7	428
Info. and other services	2.5	1.0	240
Manufacturing	3.7	0.8	517
Prof., tech., bus. services	1.6	0.7	311
Retail and wholesale trade	4.2	1.3	237
Transp., warehousing, utilities	2.6	1.3	156
Union job (*p-value: 0.84*)			
No	2.8	0.4	2,070
Yes	2.6	0.8	382
Tenure (*p-value: 0.97*)			
0–6 mos	2.5	0.7	472
6 mos to 2 yrs	2.7	0.5	861
2 yrs to 5 yrs	2.8	0.7	536
More than 5 yrs	3.0	0.6	698
Reason for layoff (*p-value: 0.02*)			
Slow business conditions	4.9	0.9	636
Going out of business	3.0	1.3	167
Reorganization/pos. abolished	2.2	0.6	641
Fired	1.5	0.5	653
Firm size (*p-value: 0.02*)			
1–49	4.1	0.7	927
50–499	2.0	0.5	845
500+	2.5	0.6	651

Notes: We consider the null hypothesis of equal coefficients across the indicated categories (e.g., education groups) and report the *p*-value in parentheses. See Section IIIC for more information.

Question for permanent layoffs: "Before your employer let you go, was there any discussion about possible cuts to pay, benefits or hours to save your job?"

Question for temporary layoffs: "Did you and your employer discuss a cut in pay, benefits or hours as an alternative to a temporary layoff?"

common than unsuccessful ones or that successful ones are also rare. Second, *some* successful efforts to implement job-saving pay cuts are indirectly captured by our frame. Specifically, if a job-saving wage cut is initially successful at preserving the employment relationship, but later shocks or other developments lead to a layoff,

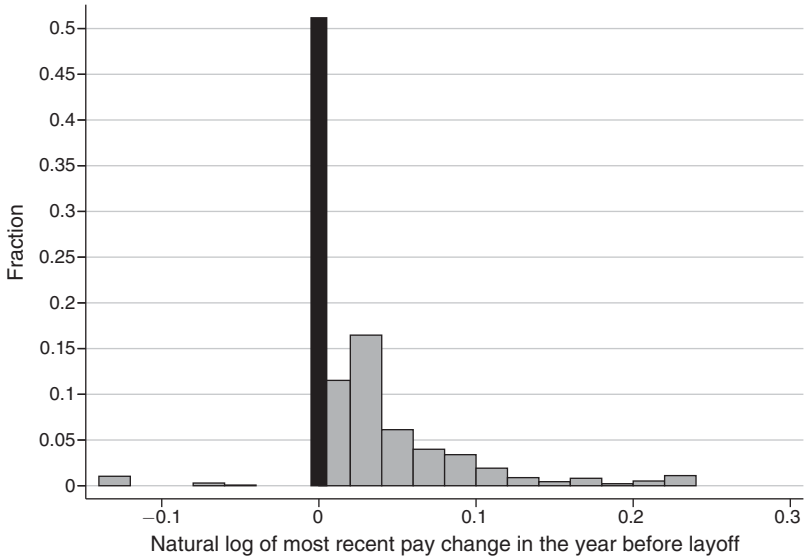

Figure 3. Histogram of log Wage Changes on the Lost Job in the Prior Year

Notes: We restrict to individuals with at least one year of tenure on their lost job. We drop observations for which the hourly or reservation wages are below $2 or above $200. We then winsorize log wage change values at the first and ninety-ninth percentiles. Width of each bin is 0.2. The black bar denotes the same pay and benefits throughout an individual's previous job. Gray bars are for individuals reporting a change in their compensation due to a change in their salary or hourly wage. See Section IIIC for more information.

Questions: "When was the most recent change to your pay or benefits on your previous job?" and "How much did your salary or hourly wage change?"

that layoff is in scope for job losers who claim UI benefits. We would then see UI benefit recipients who experienced a pay cut in the months leading up to job loss. This type of outcome very rarely happens in our sample, as shown by Figure 3. In short, the evidence says that job-saving pay cuts are rare for the types of workers who collect UI benefits. We turn next to why.

IV. Why Are Wages Sticky on the Layoff Margin? Worker Views

In this section, we first present evidence on what job losers perceive about the reasons for wage stickiness at the point of separation. We then consider why many of them refuse pay cuts to save their lost jobs. Lastly, we use the data to estimate the share of lost jobs that violate bilateral efficiency on the separation margin.

A. *What Job Losers Perceive about the Reasons for Wage Stickiness*

If the respondent had no discussion with his former employer about job-saving compensation cuts, we ask, "If you had to guess, why do you think your employer did not discuss any kind of cuts in pay, benefits or hours?" There are several response options, including an "Other" option that allowed for free-form text entries. Respondents could select more than one option, and about 8 percent did so. Table 6 summarizes the response distribution.

Table 6—Percent of Respondents by Reason for Why No Discussion Occurred about Cuts in Pay, Benefits, or Hours

	It would lead the best workers to quit (1)	It would undermine morale (2)	It would not have prevented my layoff (3)	It's not allowed under union contract (4)	It would violate minimum wage laws (5)	Benefits cut would violate the law (6)	It would upset the employer's pay scale (7)	Don't know (8)	Other (9)
Panel A. All responses									
Overall									
Count = 2,496	8.4	8.0	36.3		0.9	1.5	2.4	38.9	9.4
	(0.6)	(0.5)	(1.0)		(0.2)	(0.2)	(0.3)	(1.0)	(0.6)
Permanent layoff									
Count = 2,020	9.0	9.1	37.7		1.0	1.6	2.3	39.3	10.7
	(0.6)	(0.6)	(1.1)		(0.2)	(0.3)	(0.3)	(1.1)	(0.7)
Temporary layoff									
Count = 476	5.9	3.2	30.3		0.6	1.3	2.7	37.2	3.8
	(1.1)	(0.8)	(2.1)		(0.4)	(0.5)	(0.7)	(2.2)	(0.9)
500+ employees									
Count = 635	8.5	9.8	34.3		0.6	1.9	3.0	34.6	10.2
	(1.1)	(1.2)	(1.9)		(0.3)	(0.5)	(0.7)	(1.9)	(1.2)
Union job									
Count = 372	4.6	3.2	26.1	44.6	1.1	2.4	3.2	29.3	4.6
	(1.1)	(0.9)	(2.3)	(2.6)	(0.5)	(0.8)	(0.9)	(2.4)	(1.1)

Panel B. Permanent layoffs: other detail

	Employer cost cutting	Bankruptcy	Job outsourced, automated or abolished	Fired for cause or poor performance	Age, gender, or race	Miscellaneous	No or uninformative response
	1.1	0.3	1.9	1.0	0.5	2.3	3.7
Count:	22	6	38	20	11	46	74

Notes: The first entry in each cell is the percent of responses, with standard errors in parentheses. Respondents could select multiple options, so row values need not sum to 100 percent. Column 4 considers only persons who lost jobs covered by union contracts. See Section IVA for more information.

Question: "If you had to guess, why do you think your employer did not discuss any kind of cuts in pay, benefits or hours?"

Several results stand out. First, 36 percent of the respondents believe the proposed pay cut would not have saved their jobs. This result is consistent with evidence in Bewley (1999, table 11.3) and with the view that many layoffs are bilaterally efficient. In other words, saving these jobs was not in the joint interest of the worker and employer.

Second, nearly 4 in 10 job losers don't know why their employers never raised the possibility of pay cuts in lieu of layoffs. This result suggests that many job losers don't understand the business considerations that led to their layoffs. It also raises a question that we did not foresee when designing the survey: Why, when faced with job loss, do so few workers initiate discussions about job-preserving pay cuts? Indeed, only 7 of 2,567 job losers in our sample say they initiated a discussion with their former employer about job-preserving pay cuts. Another six job losers say their coworkers or union did so. Apparently, the types of workers who claim UI benefits see themselves as passive actors in the wage-setting process. Why that is so, especially when many express an openness to pay cuts, is unclear to us. It would be useful to explore this matter in future work.

Third, 8 percent of job losers say their employers don't cut pay because it would lead the best workers to quit. Another 8 percent say pay cuts would undermine worker morale. Employer-side surveys often uncover greater concerns about adverse selection and morale effects, as in Campbell and Kamlani (1997); Bewley (1999); and Bertheau et al. (2022). We offer a possible explanation for greater employer concerns about morale effects in Section VD. However, it's also the case that our survey differs from these employer surveys with respect to sample frames, institutional settings, and labor market conditions.

Fourth, 45 percent of those who lost union jobs point to union wage contracts to explain why their former employers did not offer job-saving wage cuts. This finding says that collective bargaining is a major source of wage stickiness on the layoff margin in the union sector. It aligns with other evidence of downward nominal wage rigidities in the union sector. See Card (1990) and Dickens et al. (2007), among others.

In contrast, few job losers point directly to company pay scales as a source of wage rigidity on the layoff margin. Even among those who lost jobs at large firms (500 or more employees), only 3 percent point to company pay scales as an impediment to discussions about job-saving wage cuts. Pay scales are important in other respects. Hazell et al. (2022), for example, find that wage offers for entry-level jobs are insensitive to local labor market conditions in many multiestablishment firms. In addition, the perceived concerns in our data about adverse selection on the quits margin point to a form of internal pay scales. Otherwise, companies would use individualized pay cuts to prevent adverse selection.

As noted in the introduction, we find only a tiny role for minimum wage and benefit laws as a source of downward wage rigidity on the layoff margin. In particular, less than 1 percent of job losers report that compensation cuts would violate minimum wage laws, and less than 2 percent report that benefit cuts would violate the law. Moreover, only 4 percent report an hourly pay rate on their lost job less than 1.05 times the legal minimum.

B. *Why Job Losers Refuse Hypothetical Pay Cuts*

When job losers refuse our proposed wage cuts to save their jobs, we ask why. Here as well, we present several response options, including an "Other" option with free-form entries. Twenty-three percent of the respondents select more than one option. Table 7 reports the results.

Consider UI benefit recipients on permanent layoff who refuse the proposed pay cut. Half of these respondents refuse because they can find another job that pays better. Another 5 percent select "Other" and enter an explanation that we classify under "I am/would be underpaid." Recall from Table 3 that 4 in 10 permanent job losers refuse the proposed pay cuts. Thus, about 22 percent of all permanent job losers see their outside job options as superior to the proposed pay. For these cases, our results indicate that saving the job was not in the joint interest of worker and employer, although we cannot rule out the possibility that a smaller job-saving pay cut might be acceptable to both worker and employer. Similar remarks apply for refusers on temporary layoff, 26 percent of whom say they can find another job that pays more than the proposed wage.

Table 7—Percent of Respondents by Reason for Refusing a Pay Cut

	Count	Can find another job that pays more (1)	The pay cut would feel like an insult (2)	I prefer not working over working at a lower pay level (3)	Other (4)	Uninformative response (5)
Panel A. Permanent layoffs						
Permanent layoffs from nonunion and union jobs	1,102	50.1 (1.5)	38.0 (1.5)	20.5 (1.2)	19.4 (1.2)	4.4 (0.6)
Permanent layoffs from nonunion jobs	1,031	50.6 (1.6)	38.4 (1.5)	19.8 (1.2)	19.4 (1.2)	4.5 (0.6)
Permanent layoffs from union jobs	71	42.3 (5.9)	32.4 (5.6)	31.0 (5.5)	19.7 (4.8)	4.2 (2.4)
		Can't afford the pay cut	I am/ would be underpaid	Bad fit, unsatisfactory conditions, long commute	Contract violation	Miscellaneous
Other detail for permanent layoffs from nonunion jobs	200	7.6 (0.8)	4.6 (0.6)	3.5 (0.6)	0.5 (0.2)	3.3 (0.6)
		Can't afford the pay cut	Union agreement	Miscellaneous		
Other detail for permanent layoffs from union jobs	14	7.0 (3.1)	11.3 (3.8)	1.4 (1.4)		
		Can find another job that pays more (1)	The pay cut would feel like an insult (2)	I prefer not working over working at a lower pay level (3)	Other (4)	Uninformative response (5)
Panel B. Temporary layoffs						
Temporary layoffs from nonunion and union jobs	271	26.2 (2.7)	24.0 (2.6)	24.4 (2.6)	56.8 (3.0)	4.4 (1.3)
Temporary layoffs from nonunion jobs	89	44.9 (5.3)	23.6 (4.5)	28.1 (4.8)	39.3 (5.2)	4.5 (2.2)
Temporary layoffs from union jobs	182	17.0 (2.8)	24.2 (3.2)	22.5 (3.1)	65.4 (3.5)	4.4 (1.5)
		The temporary cut might become a permanent one	Can't afford the pay cut	Miscellaneous		
Other detail for temporary layoffs from nonunion jobs	35	32.6 (5.0)	3.4 (1.9)	3.4 (1.9)		
		The temporary cut might become a permanent one	Can't afford the pay cut	Union agreement	Contract violation	Miscellaneous
Other detail for temporary layoffs from union jobs	119	47.3 (3.7)	0.5 (0.5)	15.9 (2.7)	2.2 (1.1)	0.5 (0.5)

Notes: The first entry in each cell is the percent of responses among individuals not willing to accept a pay cut, with standard errors in parentheses. Respondents could select all that apply, so the rows do not have to sum to 100 percent. See Section IVB for more information.

Question for permanent layoffs: "What are the reasons why you would not accept a pay cut of *X* percent to avoid being laid off?"

Question for temporary layoffs: "What are the reasons why you would not accept a temporary pay cut of *X* percent to avoid being temporarily laid off?"

One-fifth of refusers on permanent layoff report that not working is preferable to working at the proposed pay, and another 7 percent select "Other" and supply a written explanation that we classify under "Can't afford the pay cut." Twenty-four percent of refusers on temporary layoff also report that not working is preferable to

working at the proposed pay, and about 1 percent say they "Can't afford the pay cut." In short, more than a quarter of the refusers see the proposed wage as too low to elicit their labor supply. For these cases as well, our results suggest that saving the job was not in the joint interest of worker and employer.

Thirty-eight percent of refusers on permanent layoff say accepting the proposed pay cut would feel like an insult, and 24 percent of refusers on temporary layoff say the same. Recall that among those who would accept our proposed wage cuts, 8 percent say employers don't offer them because it would undermine morale. In the same spirit, Bewley (1999) finds that many managers avoid pay cuts because they could be perceived as insulting. These various results resonate with theories that stress fairness norms and morale effects, as in Akerlof (1982) and Akerlof and Yellen (1990). According to these theories, productivity suffers when workers feel insulted or wrongly treated by their pay. As a result, it can be unprofitable for an employer to implement wage cuts, even if the new wage lies below the pre–wage cut value of the worker's product and above the value of the worker's outside options. In these circumstances, the negative morale effects of wage cuts stand in the way of achieving bilaterally efficient outcomes on the layoff margin.

Table 7 contains two other noteworthy results. First, 16 percent of the refusers on temporary layoff from union jobs point to a "union agreement" as the reason for their refusal. This finding reinforces our earlier conclusion that collective bargaining is an important source of sticky wages on the layoff margin in the union sector.

Second, one-third of job losers on temporary layoff from nonunion jobs—and nearly half of those on temporary layoff from union jobs—refuse temporary wage reductions because they fear the temporary cut could become permanent. These fears make sense if accepting a temporary cut leads to a downward revision in the employer's assessment of the worker's reservation wage. That would weaken the worker's bargaining position going forward. Private information about the opportunity value of the worker's time is an essential element of this interpretation. Alternatively, acquiescing to a temporary pay cut might undermine norms about what constitutes a fair wage level, or it could lower the reference wage in future negotiations. These interpretations differ greatly in their details, but they share a common implication: workers may refuse a temporary wage cut even when the proposed wage exceeds the (current) opportunity value of the worker's time. That outcome constitutes a violation of bilateral efficiency in the employment relationship, one that manifests as an excess of temporary layoffs rather than an excess of permanent separations.

Recall from Table 4 that union workers are much less willing to accept temporary wage cuts to avoid temporary layoffs. This differential is almost entirely explained by greater fears among union workers that a temporary wage cut might become permanent. To see this point, we consider job losers on temporary layoff and calculate the share that refuses our proposed wage cut *and* points to fears that a temporary cut might become permanent as the reason for refusal. This share is 33 percent for those on temporary layoff from union jobs and 17 percent for those on temporary layoff from nonunion jobs. The differential of 16 percentage points is nearly as large as the conditional mean difference between union and nonunion workers in the willingness to accept temporary pay cuts that we find in Table 4.

C. *How Many Layoffs Violate Bilateral Efficiency?*

The foregoing analysis suggests that some layoffs (and UI benefit payments) could be avoided by wage cuts that are in the interest of both employer and employee. To assess how many, we start by identifying job losers who meet two conditions. First, they would accept the proposed wage cut. Second, they believe the proposed cut would save their lost job. To flag the second condition, we identify job losers who do *not* say, "It would not have prevented my layoff" in response to "If you had to guess, why do you think your employer did not discuss any kind of cuts in pay, benefits or hours?"

Before proceeding, consider how this exercise relates to models of efficient separations in the context of bilateral employment relationships. Let r^W denote the worker's reservation wage on the lost job, that is, the lowest wage such that he wants to keep the lost job, given his outside options and the job's nonwage characteristics. Likewise, let r^E denote the highest wage such that the employer wants to retain the worker. If $r^E > r^W$, the employment relationship yields a positive flow surplus, and its continuation is bilaterally efficient. Moreover, it is individually optimal for each party to continue the relationship for any wage $\tilde{w} \in \left[r^W, r^E\right]$. If $\left[r^W, r^E\right]$ is empty, ending the employment relationship is bilaterally efficient.

Now consider a survey respondent with wage w on the lost job. If the respondent accepts our proposed wage cut of X percent to save the job, it means that $[1 - (X/100)]w \geq r^W$. If the respondent also believes the proposed pay cut is large enough to save the job, it means that $[1 - (X/100)]w \leq r^E$. Thus, if both conditions hold for a given lost job, we infer that $[r^W, r^E]$ is a nonempty set and that $[1 - (X/100)]w \in [r^W, r^E]$. In other words, we have identified a layoff that could be avoided by a suitable pay cut according to models characterized by bilateral employment relationships and privately efficient separations.

In practice, 28 percent of the job losers in our sample say they would accept the proposed wage cut *and* don't say the cut is too small to prevent their layoff. The corresponding figure is somewhat higher for women, nonunion jobs, layoffs by larger employers, and persons with low tenure on the lost job (online Appendix Table A7). It is only 14 percent when the respondent reports "Going out of business" as the reason for the layoff. Looking across industries, layoffs that meet both conditions range from 22 percent in Transportation, Warehousing and Utilities and 23 percent in Leisure and Hospitality to 31 percent in Education and Health Services and 32 percent in Finance, Insurance and Real Estate.

To estimate the fraction of layoffs that violate bilateral efficiency requires us to consider two additional matters. First, some respondents who do not meet both conditions specified above might do so if presented with a smaller or larger wage cut (smaller or larger X). We can address this matter by inspecting how the share of job losers that meet both conditions varies with the size of the proposed wage cut. For permanent layoffs, the share ranges from 35 percent at a 5 percent cut to 22 percent at a 25 percent cut (online Appendix Table A8). For temporary layoffs, it ranges from 41 percent to 24 percent.

Second, recall from Table 6 that nearly 4 in 10 job losers "Don't know" why their employer did not discuss wage cuts in lieu of layoff. If they knew, they might say the proposed wage cut would not save their lost job. Rather than taking a strong

Table 8—Estimated Percent of Permanent Layoffs That Violate Bilateral Efficiency, by Size of Proposed Wage Cut and Treatment of "Don't Know" Cases

	Size of proposed wage cut				
Treatment of "Don't know" cases in computing the estimates	5%	10%	15%	20%	25%
(1) Would not prevent layoff	12.3	10.0	12.6	7.1	7.5
(2) Would prevent layoff	35.0	28.9	28.2	23.8	22.4
(3) Would prevent layoff in some cases, same fraction as in rest of sample	23.0	16.0	18.1	13.2	12.3
Observation count	391	401	404	408	415

Notes: To compute the reported estimates, we identify instances in which the proposed wage cut is small enough to be acceptable to the worker and large enough to save the job (in the worker's perception). As reported in Table 6, 39 percent of respondents on permanent layoff "Don't know" whether the proposed wage cut is large enough to save the job. In row 1, we treat these cases as equivalent to "Would not prevent layoff," yielding a conservative lower bound estimate. In row 2, we treat these cases as equivalent to "Would prevent layoff." Row 3 reports our preferred estimates, which we obtain by treating a randomly assigned 62 percent of "Don't know" responses as "Would not prevent layoff" and the rest as "Would prevent layoff." This 62 percent figure matches the share among respondents on permanent layoff who say they do know. Standard errors for the reported estimates range from 1.3 percent to 2.4 percent. See Section IVC for more information.

stand on this matter, Table 8 presents results for two polar assumptions and one middle-ground assumption. Row 1 treats all "Don't know" cases as "Would not prevent layoff," yielding a lower bound estimate of 12.6 percent in the middle column. (Other X values, say, 14 percent or 17 percent, might yield a somewhat greater lower bound estimate.) Based on this result, we conclude that at least 13 percent of the layoffs in our sample violate bilateral efficiency. Row 2 considers the other polar case, treating all "Don't know" cases as involving a large enough pay cut to save the job. The resulting 35.0 percent figure in the first column of row 2 is an upper bound estimate for the percentage of layoffs that violate bilateral efficiency.

Row 3 presents results for the middle-ground assumption: the share of proposed wage cuts that "Would not prevent layoff" is the same for "Don't know" and do know cases, and "Don't know" status is uncorrelated with whether the proposed wage cut would lead the employer to forgo the layoff.[15] This middle-ground assumption yields our preferred estimate for the percentage of layoffs that violate bilateral efficiency: 23.0 percent, the value in column 1 of row 3. (As before, other X values might yield a somewhat higher estimate.) This result underpins our claim that about one-quarter of the layoffs in our sample violate the condition for bilaterally efficient separations.

In closing this discussion, we stress that our estimates for avoidable layoffs rely on worker assessments of whether the proposed wage cuts would lead the employer to forgo layoffs. Worker perceptions in this regard may diverge from employer views. A sizable divergence would alter our estimates and warrant careful study in its own right. Such a divergence would also violate a maintained assumption in leading theories of separations, frictional unemployment, and job ladders, namely, the assumption that employer and employee are identically informed about the match continuation value.

[15] In practice, we randomly assign the "Don't know" cases to the other categories listed in Table 6.

Tackling this matter directly requires a dataset that elicits *from job losers* their willingness to accept job-preserving wage cuts and *from employers* their willingness to forgo layoffs in exchange for pay cuts. While that might seem like a demanding data requirement, every state-level UI system in the United States operates an administrative record system that is ideally suited to function as a frame for this type of two-prong sample design. We hope to implement that design in future work.

V. Implications, Explanations, and Additional Evidence

A. *Assessing the Efficient Separations View*

The "efficient separations" view holds that all layoffs, quits, and retentions are privately efficient in the sense of maximizing joint employer-worker surplus. Barro (1977, p. 311) explains the logic: "In the absence of any 'transaction costs' that would, for example, inhibit the contractual arrangements for making side payments between firms and workers, it is apparent that the employment rule would be selected in order to maximize the total pie possessed by the two parties." Under this view, "quits" and "layoffs" tell us which party initiated the separations, but the quit-layoff distinction lacks deeper significance. McLaughlin (1990, 1991) develops this theme in detail and interprets data on quits and layoffs through the lens of the efficient separations view.

Barro (1977) stresses that sticky (flow) wages can give rise to an "apparent nonwage rationing of jobs" when, in fact, the employment rule equates the marginal product of labor to the marginal value of the worker's time in all states of nature. Thus, we cannot confidently leap from the abundant evidence of nominal wage stickiness to the conclusion that wage rigidities cause inefficient separations. Moreover, researchers rarely have direct observations on the value of a worker's product and the value of his time. That makes it hard to assess whether sticky wages drive privately inefficient separations. Our empirical design cuts through these challenges in two ways. First, layoffs are clearly consequential for employment, and permanent layoffs also foreclose the possibility of future "side payments." For layoffs then, it is informative to consider flow wages at the point of separation. Second, our survey directly probes whether sticky wages produce layoffs in situations where the perceived value of the worker's product on the lost job exceeds the value of his time.

Our survey data let us assess the efficient separations view under the maintained assumption of strictly bilateral employment relationships. We can then evaluate (private) efficiency one layoff at a time, that is, without reference to whether the firm has other workers, what it pays them, or their outside options. We need not concern ourselves with cross-worker dependencies in the production function or in compensation arrangements. Taking that approach in Section IVC, we find that about one-quarter of the layoffs in our sample violate bilateral efficiency. This result is important because it says that we cannot fully understand why layoffs happen unless we drop the efficient separations view or step away from the influential class of theories that posit strictly bilateral employment relationships.

B. *Theories That Stress Private Information*

Hall and Lazear (1984) consider bilateral employment relationships in settings where the employer has private information about the value of the worker's output in the match and the worker has private information about the value of his outside options.[16] When only one party has private information, efficiency on the separations margin is achieved by placing the wage-setting decision in the hands of that party. When both parties have private information, the second-best contract involves real wage rigidity and an excess sensitivity of layoffs (and quits) to labor demand shocks relative to the full-information benchmark. That is, privately inefficient separations arise in some states of the world.

Malcomson (1997) revisits their analysis, allowing for investments that are specific to the employment relationship. He reaches the same conclusion about inefficient separations for the case of two-sided private information. He also notes that employers will make no costly relationship-specific investments if the employee has the sole power to set wages. As he remarks, "A fixed wage contract can typically improve on that" (Malcomson 1997, p. 1948). Thus, the combination of private information about the worker's outside option and the need to incentivize specific investments by the employer also gives rise to second-best contracts whereby sticky wages generate privately inefficient layoffs in some states of the world.

These explanations for (consequential) wage stickiness on the layoff margin are appealing because they build on assumptions that are apt for many employment relationships. In particular, private information about the value of match output and the value of outside options appears to characterize many employment relationships. It is also evident that employers often make specific investments in their employment relationships.

Still, our results raise questions for theories that stress the role of private information in bilateral relationships. To see why, start with the observation that layoffs are often associated with visible developments like industry contractions, poor local economic conditions, and recessions.[17] We conjecture that these visible developments often coincide with new private information about match continuation values or outside options that could, under the right conditions (e.g., sufficient trust), be communicated in a credible manner from employer to worker, or vice versa. If this conjecture is correct, workers and employers would sometimes engage in discussions about pay cuts in lieu of layoffs, and those discussions would sometimes fail, thereby selecting them into our sample. Yet, as we have seen, employer-worker discussions about pay cuts in lieu of layoffs are extremely rare in our sample.

How might we rationalize this set of observations? One possibility is that our conjecture is wrong. A second possibility is that the right conditions and institutions are not in place to facilitate trust and credible communication between workers and employers. A third possibility is that we must look beyond theories founded on bilateral employment relationships to fully appreciate how private information can

[16] In the context of our minimalist model in Section IVC, the worker has private information about r^W, and the employer has private information about r^E.

[17] For evidence, see Fallick (1996) and Davis and von Wachter (2011, Figure 1).

lead to layoffs that violate bilateral efficiency. Some evidence points to a role for the second and third possibilities, as we discuss below.

C. *Other Explanations for Sticky Wages on the Layoff Margin*

Other explanations for sticky wages on the layoff margin include the idea that wage cuts violate fairness norms, thereby triggering drops in effort and productivity (Akerlof and Yellen 1990); the view that wage cuts undermine employee morale, with negative effects on productivity (Bewley 1999); the idea that wage cuts hurt workforce quality by inducing adverse selection on the quits margin (Weiss 1990); the related idea that layoffs, unlike across-the-board pay cuts, let the employer choose which employment relationships to terminate; the observation that company-level compensation policies and collective bargaining agreements often feature pay structures with limited flexibility; and theories of how insider-outsider conflicts can lead to inefficient wage structures and rigid separation policies (Lindbeck and Snower 2002). Many of these other explanations depart from a strictly bilateral perspective on compensation, separations, and other aspects of the employment relationship.

Our results provide some support for several of these ideas. When asked, "why do you think your employer did not discuss any kind of cuts in pay, benefits or hours" as an alternative to layoffs, 8 percent of job losers say it would lead the best workers to quit (Table 6). Another 8 percent say it would undermine morale. Among those who lost union jobs (16 percent of our sample), 45 percent say "it's not allowed under the union contract," and another 3 percent point to the "employer's pay scale" as the reason. Among job losers on permanent layoff who refuse our proposed wage cuts, 38 percent say, "The pay cut would feel like an insult" (Table 7). Imperfect knowledge about which employees would view a proposed wage cut as insulting could deter an employer from offering wage cuts to any employees.

Employer-side surveys typically find support for these ideas as well, but often with a greater frequency of expressed concerns about morale effects and fairness norms. For example, when Bertheau et al. (2022) ask, "What are the main reasons for not lowering the contractual base pay?" 73 percent of Danish firms agree that it would "damage morale," 61 percent see "base pay as a commitment," and 51 percent worry about "adverse productivity consequences." We point to one reason for the high frequency of employer concerns about fairness norms and morale effects in our case study discussion below.

In a field experiment, Kube, Maréchal, and Puppe (2013) find that surprise wage cuts (relative to an initial offer wage) cause large productivity drops in the cataloging of library books. The productivity drop took the form of a slower work rate rather than a greater incidence of cataloging errors. In contrast, surprise wage hikes (again relative to an initial offer wage) do not yield productivity gains relative to baseline. This pattern of results suggests that wage cuts relative to a reference wage lead workers to exert less effort and produce less per unit time. Mas (2006) finds a decline in the performance of police departments after they lose in final offer arbitration. As Kube, Maréchal, and Puppe (2013) discuss, many laboratory experiments also find a positive relationship between wages and effort.

Kaur (2019) offers perhaps the most compelling evidence that fairness norms underpin downward nominal wage rigidity, with negative consequences for employment in some states of the world. However, her setting—markets for casual daily agricultural workers in rural India—is far removed from that of most employment relationships in a modern advanced economy. The same concern pertains to laboratory experiments and most field experiments as well. Still, it is noteworthy that worker surveys, employer surveys, laboratory experiments, field experiments, and research that exploits plausibly exogenous variation in observational data all point to fairness norms and morale effects as forces that can inhibit job-saving wage cuts in some circumstances where they would otherwise be bilaterally efficient.

D. *Lessons from Case Studies*

Krueger and Mas (2004) provide an in-depth study of high defect rates in automobile tires manufactured by Firestone in the mid-1990s. Ultimately, defect problems led Firestone to recall 14 million tires. Krueger and Mas (2004) amass strong evidence that labor strife at the company's Decatur, Illinois plant was a major reason for the high defect rates. For our purposes, their most notable finding is that defect rates rose at the Decatur plant around the time the company announced it would depart from industry-wide "pattern bargaining" and demand concessions in wages, benefits, and work schedules to take effect a few months later, after the then-current union contract expired. This example illustrates how the mere act of proposing compensation cuts can undermine productivity.

As Krueger and Mas (2004, p. 254) note, the National Highway Traffic and Safety Administration "reported that the Firestone tires under investigation were related to 271 fatalities and more than 800 injuries." In their statistical analysis, Krueger and Mas (2004) also find that unusually high defect rates in Firestone tires led to excess fatalities and injuries. When product defect costs are high, the potential for retaliation and performance shortfalls by even a small share of workers can become major deterrents to wage cuts. That is especially so when defects are hard to detect before they cause major harm and when it is hard to determine who is responsible for defects. Wage cuts can be unprofitable in these circumstances, even when they would be acceptable to most members of an employer's workforce.

The Firestone case suggests why employers might be more concerned about fairness norms and morale effects than the average worker. Specifically, if product defects (or deliberate sabotage) are sufficiently costly, a plan for job-saving wage cuts that is both profitable and acceptable to most employees can be derailed by fears of how a few aggrieved employees might retaliate. If those few can be identified in advance and terminated, the best available action may be to fire them and cut wages for others. If they cannot be identified in advance, or if it is infeasible to selectively fire them, broad layoffs can be the best feasible action. That can be true even when layoffs are bilaterally inefficient for most employer-worker pairs.

Lee and Rupp (2007) examine on-time flight performance at US airlines in reaction to large, permanent wage reductions for pilots. They interpret on-time flight performance as a proxy for unobservable pilot effort and focus their investigation on the first few years after the 9/11 terrorist attacks. As they remark, "every large US 'legacy' carrier experienced substantial wage reductions as a result of bankruptcy,

negotiations under the threat of bankruptcy, or a contractually mandated arbitration decision between a carrier and its pilots' union" (Lee and Rupp 2007, pp. 726–27). Carrier-wide wage cuts ranged from 8 to 33 percent and took effect at various times from July 2002 to May 2005. On a cumulative basis, the smallest pilot wage cut at any legacy carrier was 15 percent.

Lee and Rupp (2007) find only modest, short-lived drops in on-time flight performance after these carrier-level pilot wage cuts took effect.[18] Even the short-lived drops in on-time performance were limited to nonbankrupt airlines. Bankrupt carriers did not see on-time performance drops. Apparently, it is sometimes possible to implement large, permanent wage cuts without generating a persistent, material productivity drop.

The circumstances of these pilot wage cuts are distinctive in several respects. First, airline financial distress during this period was obvious, widely recognized, and arguably not the "fault" of the airlines or their management. Second, legacy airline pilots were highly paid even after the pay cuts. For both reasons, perceptions of unfairness would seem less salient in this setting than in many others. Bewley (1999) also notes that " … pay cuts were more easily accepted when employees understood that company problems justified them" (p. 202), and "a company can reduce raises or even cut pay if it has serious problems" (p. 378).

Third, there was little scope for adverse selection on the quits margin to derail pilot wage cuts during this period. Pilots, especially at legacy carriers, were paid much more than they could earn in other jobs because of their highly specialized skills (Hirsch and Macpherson 2000). Seniority-based pay schedules also made it financially unrewarding for pilots to quit one carrier to start flying for another carrier. In contrast, Sandvik et al. (2020) find that pay cuts for sales staff in a call center raised quit rates by the most productive employees.

E. *Some Complementary Employer-Side Survey Evidence*

Bertheau et al. (2022) survey nearly 2,500 Danish firms, document how they adjusted labor inputs and compensation during the 2020 pandemic crisis, and probe how firms see the choice between wage cuts and layoffs. According to their Figure 1, 19 percent of firms implemented permanent layoffs in 2020, and 5 percent implemented temporary layoffs. When asked, "Why didn't you lower pay instead of laying off employees?" (Figure 8), 59 percent of the firms with layoffs say, "Pay cuts would not have saved jobs." When asked, "What reduction in the total salary cost (base pay and bonuses) could have prevented layoffs?" (Figure 9), 18 percent of firms with layoffs say 0–20 percent, and another 18 percent say 21–60 percent.

Remarkably, 61 percent of firms with layoffs "Do not know" what size pay cut would prevent layoffs. This employer-side evidence begs the question: Why don't these employers discuss the possibility of pay cuts in lieu of layoffs with their at-risk

[18] Lee and Rupp (2007, Table 8) also report large positive abnormal stock returns for the pay-cutting carrier in reaction to 10 of 12 announcements of pilot wage-reduction agreements. The average carrier-level abnormal return over a 3-day window around the announcement date is 22 percent. Thus, the wage-reduction agreements did not simply confirm prior expectations.

employees? Recall from Table 5 that only 3 percent of job losers had prior discussions with their employers about the possibility of cuts in pay, benefits, or hours in lieu of layoffs. That worker-side evidence also begs the question of why many employers don't discuss alternatives to layoffs with their at-risk employees. It's hard to see a compelling answer to this question through the lens of standard models founded on bilateral employment relationships. In contrast, it's easy to understand why employers don't explore the possibility of pay cuts if they are precluded by collective bargaining agreements, if employers think pay cuts would violate fairness norms or their internal pay structures, or if employers believe that pay cuts would lead to other problems and costs relative to layoffs, as in the Firestone study.

Excluding the "Do not know" cases in the sample of Bertheau et al. (2022), 46 percent of firms with layoffs say a pay reduction of 0–20 percent would prevent the layoff. This result suggests considerable scope for job-saving pay cuts, especially if the Danish job losers are as open to wage cuts as the American job losers in our sample.

VI. Concluding Remarks

Our data and analysis reveal insights that are hidden from employer surveys and previous studies. For example, we find that more than half of unemployment benefit recipients would accept wage cuts of 5–10 percent to save their lost jobs, and one-third would accept a 25 percent cut. Employer reluctance to cut wages to save jobs becomes more puzzling when so many job losers are open to the idea. We also find that worker-employer discussions about cuts in pay, benefits, or hours in lieu of layoffs are exceedingly rare. To our knowledge, we are the first to document the disjunction between widespread worker-side openness to job-saving wage cuts and the unwillingness of many employers to broach the subject.

When asked why employers don't discuss "any kind of cuts in pay, benefits or hours" as an alternative to layoffs, some job losers say it would undermine morale or lead the best workers to quit. Among those who reject our proposed wage cuts, 38 percent do so because "the pay cut would feel like an insult." These results echo findings in employer surveys, but concerns about fairness norms and morale effects in our survey data are less frequent than what typically emerges from employer surveys. Our discussion of the Firestone case study by Krueger and Mas (2004) offers a possible reconciliation. Specifically, the high costs and deadly consequences of defective tires illustrate how retaliation and performance shortfalls by a few workers can derail job-saving pay cuts for the larger workforce. That remains true even when layoffs are bilaterally inefficient for most employer-worker pairs.

Jobs in the private sector covered by union wage agreements account for about 15 percent of all layoffs in our sample and about three-quarters of the temporary layoffs. Forty-five percent of these union job losers say contractual restrictions prevent employers from offering wage cuts in lieu of layoffs, and another 3 percent point to employer pay scales. In addition, 15 percent of union job losers who refuse our proposed wage cuts explain that it would violate the union agreement. These results suggest that collective bargaining agreements are a major source of sticky wages on the layoff margin in union jobs.

We also use our survey data to implement a novel, direct test of the bilateral condition for privately efficient layoffs. We find that about one-quarter of the layoffs in our sample violate bilateral efficiency. This result is a material departure from the efficient separations benchmark within the class of theories that focus on strictly bilateral employment relationships. These theories inform much economic thinking about job separations, frictional unemployment, wages, and job ladders. In concurrent research, Jäger, Schoefer, and Zweimüller (2023) find large deviations from the efficient separations benchmark via an entirely different empirical inquiry. More broadly, our findings point to the need for theories of compensation policies and practices at the level of organizations (rather than bilateral matches) to fully understand why layoffs happen.

It's worth reiterating that our findings pertain to a single state (Illinois) with a diversified economy during a period of low inflation and tight labor markets. The role of sticky wages on the layoff margin surely varies over time and space. In this regard, several hypotheses warrant attention in future work: (i) Workers are even more open to job-saving wage cuts during recessions. (ii) High inflation, as in 2021 and 2022, relaxes the bite of sticky wages on the layoff margin. (iii) Collective bargaining raises the incidence of layoffs that violate bilateral efficiency. (iv) Performance-based pay and other flexible forms of compensation (bonuses, tips, equity options, etc.) reduce the incidence of such layoffs. (v) Concerns about fairness norms and the negative morale effects of wage cuts are more common—and a more important force in deviations from bilateral efficiency—when subpar worker performance is costlier to the employer, harder to detect before negative consequences manifest, and harder to trace to specific individuals.

The survey approach developed in this paper is suitable for tackling hypotheses (i) to (iv). Tackling (v) requires a two-prong sample design that asks job losers *and* their former employers about the same layoff events and, indeed, about the same wage-reduction events. This two-prong design will also yield more powerful evidence regarding the other hypotheses. For example, asking both job losers and their former employers about their openness to job-saving pay cuts would yield sharper inferences about why layoffs happen and whether employer and worker views diverge in this regard. Although unusual, this type of two-prong sample design is entirely feasible. Every state-level unemployment insurance system in the United States operates an administrative record system that tracks unemployment benefit recipients and links them to their former employers. The same is true for unemployment insurance systems in many other countries.

Ultimately, we see this line of research as providing stronger empirical foundations for theorizing about wage stickiness and layoffs. It may also yield insights into how managerial practices, third-party mediation efforts, and policy changes can reduce the communication, coordination, contractual, and other frictions that inhibit wage adjustments on the layoff margin. Insights in this regard could reduce the frequency of layoffs and the volume of claims on the unemployment insurance system.

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