

Why Firms Lay Off Workers Instead of Cutting Wages: Evidence From Linked Survey-Administrative Data*

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Abstract

Pay cuts and layoffs need not be substitutes. Using a large-scale employer survey linked to administrative records in Denmark, we study why firms lay off workers instead of cutting wages. Most employers can cut wages but often choose not to. We find that pay cuts and layoffs carry asymmetric endogenous costs and often serve different objectives. Firms report that lowering wages triggers morale and turnover costs, while layoffs are selective and their negative impact on the morale of remaining employees is limited. Layoffs often serve workforce composition objectives beyond cost reduction. Among layoff firms, 73% agree that a pay reduction would not have saved jobs, and 61% cannot quantify a pay-cut-to-jobs-saved threshold, those that name one do not act on it. At most 23% of layoff activity is conceptually eligible for substitution. Linked administrative records show that pay cuts and layoffs co-move in distress rather than trade off. These findings call into question the within-firm substitution channel through which the lack of observed pay cuts generates employment losses in canonical macro models.

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1 Introduction

Why do firms lay off workers instead of cutting wages? A canonical view is that the two margins are substitutes: if wages cannot adjust, firms adjust employment instead. We test whether this substitution channel operates inside firms, distinguishing between what a pay cut can achieve in principle (reduce the wage bill) and whether firms can implement one and map it into jobs saved. That mapping can break down if pay cuts are constrained and costly to implement (heterogeneous contracts and pay components, morale/quit concerns, and internal pay-structure considerations) or if layoffs serve objectives beyond wage-bill savings (reorganization and selection).

To test whether the substitution channel operates inside firms, we designed and fielded a large-scale employer survey of Danish private-sector firms that measures how firms adjusted labor costs in 2020, through layoffs and through pay reductions, and elicits the stated considerations behind each choice, including whether firms can quantify a hypothetical pay cut that would have averted layoffs. We link survey responses to comprehensive administrative records on firms and workers, which provide an objective measure of each firm's revenue shock and let us compare stated pay and layoff policies with realized wage changes and layoffs at the worker level. Our final linked dataset contains 3,013 firms.

For pay cuts to substitute for layoffs, firms must be able to formulate the trade-off quantitatively, the costs of cutting pay cannot be prohibitive, and layoffs must serve wage-bill reduction rather than composition objectives. Our central finding is that pay reductions are feasible and do occur in distressed firms (among firms with a revenue reduction, 29% used some form of pay cut, including 15% that cut the base wage), yet most firms do not treat pay cuts as an operational job-saving tool. Sixty-one percent of layoff firms cannot quantify a pay-cut-to-jobs-saved threshold: they cannot state a pay-cut percentage that would have averted layoffs. Moreover, the remaining 39% who name a threshold do not act on it: realized pay adjustments fall far short of the thresholds firms themselves identified as sufficient. We construct an upper bound on the share of layoff cases for which the substitution counterfactual is even conceptually relevant: at most 23% of layoff activity qualifies. The constraints that prevent firms from acting on these thresholds are largely endogenous: morale damage, fear of quits, disruption to internal pay structures.

The two margins carry different costs and serve different objectives. On the pay-cut margin, the dominant constraints are endogenous (morale damage and fear of quits), confirming at scale the patterns Bewley (1999) documented in employer interviews. When firms do cut pay, the adjustment is broad: in more than half of cutting firms, over 60% of workers were affected, consistent with internal equity considerations that make selective pay cuts hard to

implement. Layoffs, by contrast, are selective and targeted. Only 41% of layoff firms cite financial reasons; the remainder cite reorganization, efficiency improvements, or selection. Twenty-four percent indicate that all layoffs would have occurred within two years even absent the crisis: firms use the crisis as an opportune time for reorganization and selection. Firms with non-financial layoff motives are less likely to see pay cuts as an alternative: these layoffs serve composition objectives that a broad pay cut cannot achieve.

Linked administrative records allow us to test contemporaneous co-movement in the cross-section: conditional on the same shock, do firms that cut pay lay off less? Conditional on revenue-shock severity, stayers in layoff firms experience more base-wage cuts, not fewer, and firms with few or no layoffs do not compensate with deeper pay reductions: the two margins co-move in distress rather than trade off. We find that firms reporting stronger morale-based resistance to pay cuts are less likely to cut base wages, but they do not appear to substitute toward more layoffs.

Our evidence implies that pay cuts are often not a well-defined job-saving instrument in firms' adjustment calculus. This matters for macro models that rely on within-firm wage-employment substitution. The dynamic allocative question is whether firms with tighter pay-cut constraints experience worse employment trajectories over time. Recent work provides compelling evidence that firms with a larger excess zero spike in pre-recession wage changes experience larger employment declines during the recession (Kurmann and McEntarfer, 2024; Ehrlich and Montes, 2024). Our constraint measures capture stated barriers to base-wage cuts: morale concerns that make the margin costly, and inability to quantify the trade-off at all ("Do not know"), as distinct from revealed rigidity in the wage-change distribution. Using the survey-administrative link, we construct three constraint indicators from separate survey batteries, two morale-based measures drawn from different firm populations and a "Do not know" measure, and estimate event studies in both employment levels and growth rates over 2016-2022. The morale measure from a layoff battery is validated cross-sectionally: it predicts fewer base-wage cuts, more bonus cuts. Yet this validated measure produces zero differential employment trajectory: all post-minus-pre-trend tests are insignificant. The morale measure from a non-base-wage-cutter battery shows a pre-existing employment gap that persists without widening after 2020. For "Do not know" firms, the only significant break appears in 2022, two years after the acute cost-adjustment decision; no constraint measure produces a significant 2020 effect beyond the pre-trend. Our findings are complementary to Kurmann and McEntarfer (2024): allocative effects arise when total compensation cannot decline, not when base-wage cuts alone are constrained.

That the substitution channel does not appear to operate for many firms carries implications for macroeconomics and policy. For macroeconomics, a large class of business-cycle

models relies on wage-employment substitution as a micro foundation; we find that most firms do not trade off pay cuts for layoffs. For policy, our findings suggest that removing formal barriers to wage flexibility would not lead most firms to substitute pay cuts for layoffs; the binding constraints are endogenous to the employment relationship.

Our central contribution is to show that the substitution channel does not appear to operate for many firms. Our survey builds on seminal employer-interview evidence on the costs of wage cuts (Bewley, 1999, 2007).¹ We confirm at scale the central finding of Bewley (1999): morale as the dominant barrier to pay cuts. More broadly, our findings reinforce what Elsby and Solon (2019, p. 188) identify as an overlooked message of Bewley’s work: “short-term wage stickiness need not induce inefficient allocation decisions.”²

Our linked survey-administrative dataset bridges two influential empirical traditions on wage rigidity. First, large cross-country employer surveys, most prominently the ECB Wage Dynamics Network (WDN), that document firms’ wage-setting practices and perceived constraints across European countries (e.g., Babeckỳ, Du Caju, Kosma, Lawless, Messina and Rõõm, 2010). Second, administrative microdata studies characterize the distribution of realized wage changes using worker-level earnings records (e.g., the International Wage Flexibility Project; Dickens, Goette, Groshen, Holden, Messina, Schweitzer, Turunen and Ward, 2007). We contribute evidence for Denmark (not covered in the original WDN wave analyzed by Babeckỳ et al. (2010)) by combining a representative employer survey with comprehensive firm-worker administrative records, letting us relate firms’ stated pay and layoff policies to realized wage changes and separations at the worker level.³

Worker-side evidence documents that a majority of laid-off workers would have accepted pay cuts to save their jobs (Davis and Krolikowski, 2025). Our findings point to the firm side: firms are not willing to cut pay because of endogenous costs (morale, quits, disruption to pay structures) and because many layoffs serve composition objectives that pay cuts cannot address.

Because our survey distinguishes reductions in the contractual base wage (including fixed contractual supplements) from reductions in discretionary/non-contractual bonuses and supplements, we can speak directly to the recent administrative-data debate on whether non-

¹See also Blinder and Choi (1990), Levine (1993), Campbell and Kamlani (1997).

²Bewley (1999, p. 16): “I believed that an individual firm could save a significant number of jobs by reducing pay. This is seldom true, and the firms for which it is true are precisely the ones most likely to cut pay.”

³Other related work on firms’ labor input adjustment to shocks includes Babeckỳ, Du Caju, Kosma, Lawless, Messina and Rõõm, 2012; Bertola, Dabusinskas, Hoerberichts, Izquierdo, Kwopil, Montornès and Radowski, 2012; Du Caju, Kosma, Lawless, Messina and Room, 2015; Izquierdo, Jimeno, Kosma, Lamo, Millard, Room and Viviano, 2017; Carlsson, Messina and Skans, 2021; Maibom and Vejlin, 2023; Olsson, 2024 and theoretical works on layoffs and wage adjustments include Gottfries, 1992; Thomas and Worrall, 1988; Elsby, Gottfries, Krolikowski and Solon, 2024; Blanco, Drenik, Moser and Zaratiegui, 2024.

base compensation provides a meaningful cyclical adjustment margin (Kurmann and McEntarfer, 2024) or whether base wages alone are the relevant concept for wage rigidity (Grigsby, Hurst and Yildirmaz, 2021). In our setting, bonus and discretionary-pay reductions are at least as common as base-wage reductions in distressed firms, base-wage cuts are perceived as more constrained, and administrative records show more downward adjustment in broader pay measures than in the base wage among job stayers (a gap that widens in the crisis year), consistent with Kurmann and McEntarfer (2024)’s finding that non-base components provide meaningful and procyclical downward flexibility. Our survey reveals why: morale, quit, and commitment concerns bind substantially less for bonus reductions than for base-wage cuts.

The remainder of the paper is structured as follows. Section 2 describes the linked dataset and establishes its external validity. Section 3 introduces the conceptual framework. Section 4 documents how firms adjusted labor costs in 2020. Sections 5 and 6 study employer considerations on each margin. Section 7 tests whether firms operationalize the wage-layoff trade-off. Section 8 tests the predictions in administrative data. Section 9 concludes.

2 Linked Firm Survey-Administrative Data

Our dataset links an employer survey that we designed to worker-level administrative records, so that firms’ stated adjustment policies can be observed alongside realized wages and layoffs. This section describes the linked dataset.

2.1 Our survey

We designed and fielded a survey targeting all private and public limited companies (aktieselskab (A/S) and anpartselskab (ApS)) in Denmark with at least five employees as of May 2021. The consulting firm Rambøll sent invitations through firms’ official digital mail addresses (*e-boks*) in May-August 2021.⁴⁵ The survey was fielded when the Danish economy was on the recovery track from the pandemic crisis.

The main part of the questionnaire asks whether and how the firms adjusted workers’ pay and the number of employees in 2020, and the reasons, perceptions, and attitudes towards layoffs and pay cuts.⁶ Throughout the paper, *base wage* denotes the contractual base wage including fixed contractual supplements (“*basisløn med tillæg*”), i.e. monthly, contractually guaranteed components of standard remuneration rather than discretionary bonuses. *Bonus*

⁴Firms that shut down before May 2021 are not in our sample frame.

⁵Appendix A contains the questionnaire in English. The invitation letter (Appendix Figure A.1) stated the questionnaire would take approximately 20 minutes, with the option to close and resume. The questionnaire includes skip patterns (follow-up items conditional on earlier responses). The delivered dataset does not contain paradata on completion time or within-survey navigation; our analysis uses final submitted responses.

⁶We analyze the first 35 questions of a broader employer survey.

denotes non-contractual or discretionary supplements and bonuses.⁷ We refer to cuts in these components as *base-wage reductions* and *bonus reductions*, and we use *pay reduction* as an umbrella term for a reduction in either component (we specify the component whenever it matters for interpretation).

We link the survey responses to administrative firm-account data from the General Firm Statistics (FIRM, *Generel firmastatistik*) using firm identifiers and restrict the sample to firms with at least five employees in 2019.⁸

The response rate of the survey for the target population is 11.73%, which corresponds to 3,443 firms.⁹ To ensure informed responses, we ask respondents how close they are to pay and employment decisions and delete those who report limited knowledge. We additionally link responses to administrative data on firm size and the 2019-2020 revenue change.

We remove firm observations with at least 10 missing answers to key questions on layoffs and pay cuts, or responses with straightforwardly contradictory information.¹⁰ As a result of these restrictions, our sample shrinks from 3,443 to 3,013 firms (Appendix Table A.1).

2.2 Administrative data on firms and workers

The FIRM dataset contains annual financial statements for most firms. From FIRM, we use data on revenue, labor costs, capital stock (the value of fixed assets), and value added (defined as revenue minus intermediate costs), as well as non-financial information, such as the number of employees, the number of years in business, location, and industry codes.

We complement our survey data with data on individual worker earnings and hours from the administrative records from the BFL (*Detaljeret lønmodtagerdata fra e-Indkomst*) and from the mandatory firm survey of worker earnings, hours and their components, LONN (*Lønstatistikken*), which we use to construct hourly wages.

Vacancy and unemployment data used to construct the firm-level labor market tightness indicator come from the Ministry of Employment (STAR). Appendix Table A.2 summarizes the datasets and variables.

2.3 Institutional context of the Danish labor market

Denmark presents low formal barriers to layoffs and comparatively flexible wage setting, a setting where wage-employment substitution should be relatively easier to observe if it operates. Moreover, because the binding constraints we document are endogenous (morale,

⁷The survey wording made this distinction explicit: the base-wage item refers to “*den kontraktuelle basisløn med tillæg*,” while the bonus item refers to “*ikke kontrakt fastsatte tillæg og/eller bonusser*.”

⁸Firms created after 2019 are therefore excluded.

⁹Scur, Sadun, Van Reenen, Lemos and Bloom (2021) report the response rates in surveys of 0.1-13%.

¹⁰An example is a reply “None of the above” combined with other options in response to questions that ask to “Check all that apply”.

retention, internal equity), they should operate at least as strongly in countries with stricter employment protection or less flexible wages, making Denmark a lower bound on non-substitutability. In a broad comparison, the institutional characteristics of the Danish labor market are closer to the United States than to continental Europe (Kreiner and Svarer, 2022; Andersen, 2021). The Danish labor market is characterized by relatively high job mobility rates and has some of the most flexible employment protection laws among advanced economies (OECD, 2020).

Unemployment insurance is voluntary and organized through unemployment insurance funds; eligibility requires membership and meeting standard work/earnings requirements (Kreiner and Svarer, 2022). UI eligibility depends on the nature of separation: workers who become unemployed involuntarily are generally eligible immediately, whereas voluntary quits trigger a benefit quarantine period. Importantly for employer incentives, Denmark does not finance UI through a U.S.-style experience-rated employer payroll tax; aside from a limited employer obligation to cover a small number of initial benefit days (“G-days”), layoffs do not mechanically raise firms’ future UI contributions.¹¹

Denmark has high union membership and collective-bargaining coverage, but wage setting is comparatively decentralized (OECD and AIAS, 2021). Wage setting follows a two-tier structure: industry-level agreements set minimum rates in some industries, while firm-level bargaining determines most actual pay above these minima (Bhuller, Moene, Mogstad and Vestad, 2022). Because a large fraction of workers have wages negotiated at the firm level above (often low) contractual floors, Denmark is commonly viewed as a useful environment for studying wage dynamics (Mortensen, 2003, p. 83). Denmark also scores very highly on labor-employer cooperation (Aghion, Algan and Cahuc, 2011), consistent with an institutional environment in which wage flexibility is less constrained than in many European countries.¹²

During the 2020 pandemic, the Danish government implemented several aid packages starting in March 2020, including a furlough/wage-compensation scheme (*Lønkompen-sationsordningen*) as well as broader relief measures (tax deferrals, fixed-cost compensation). Firms were allowed to cut base wages or bonuses while using the furlough scheme. The worker-level take-up rate of the furlough scheme, roughly 10% of dependent employment, was lower than

¹¹Appendix B provides details on Danish UI eligibility, rules, and employer obligations.

¹²There are four wage-setting systems in the DA classification. For 20 percent of workers in 2017, wages are set according to the *normallønssystemet* system (Arbejdsgiverforening, 2018), where wages typically follow negotiated rates and individual bargaining is limited. For 59 percent, firms must pay above an industry floor, but these floors are typically low and mainly bind for inexperienced workers. For the remaining 21 percent, wages are set at the firm level without industry minima. We construct a firm-level indicator for whether at least 50 percent of the firm’s workforce is covered by *normallønssystemet*, using data from the Danish Employer Association (DA).

in other European countries, consistent with Denmark’s program being less generous and less flexible. The firm-level incidence is higher because many firms used the scheme while covering only a fraction of their workforce.¹³

2.4 Sample description

Appendix Table A.3 compares firm and workforce characteristics in our linked survey-administrative sample to the population of Danish private firms with at least five employees. The unweighted respondent sample modestly overrepresents larger, older, and more productive firms, while workforce composition is close to population benchmarks. We therefore construct entropy-balancing weights using administrative population moments for firm size (employment) and broad sector shares (manufacturing, services, other) (Hainmueller, 2012), and use these weights throughout the analysis. After reweighting, differences in means between the survey sample and the population are small.

Several survey modules are asked conditionally. In our linked sample, 845 firms report a revenue reduction in 2020; 1,129 firms report layoffs (permanent, temporary, or furloughs); 651 firms report a revenue reduction and no base-wage cut; and 693 report a revenue reduction and no bonus cut. Appendix Table A.4 reports summary statistics for the revenue-reduction subsample.

2.5 External validity and data quality

The survey sample is representative of the population, respondents are knowledgeable, and the documented patterns are not specific to the pandemic or to Denmark’s high unionization rates.

Survey responses about firm size and revenue match administrative records (Appendix Figures A.2 and A.3). Respondent and non-respondent firms exhibit similar 2019-2020 changes in employment, labor costs, and earnings per worker across revenue-growth bins; where the joint tests reject, it is because respondents in the severely distressed tail contract *less* than non-respondents, a direction that is conservative for our thesis (Appendix Table E.1). Pre-shock firm characteristics and industry composition are balanced between the survey sample and the population (Appendix Tables F.1 and F.2). Firms that exited before the survey was fielded show similar adjustment patterns to continuing firms within the same revenue-shock bins (Appendix G), confirming that conditioning on firm survival does not drive the results.

¹³The furlough scheme allowed only a 100% reduction of hours per employee, unlike short-time work programs that allow partial reductions. A firm that expected to lay off 30% of its workforce or more than 50 employees could apply. The government paid workers up to 75 or 90 percent of their usual pay (depending on job function) with a monthly cap of 30,000 DKK (4,033 EUR), and firms covered the remainder. The scheme lasted until June 2021. See OECD (2020).

Appendix C compares survey-reported pay and layoff indicators with their administrative counterparts in the linked sample. Respondents who report being close to pay and employment decisions show higher survey-administrative agreement rates than those who do not (Appendix D).

The most consequential concern for a pandemic-era employer survey is whether the documented patterns are period-specific. Benchmarking 2020 wage and employment dynamics against the pre-period suggests they are not. Kernel density estimates of year-over-year log wage changes among job stayers show that the 2019-2020 distribution shifts modestly relative to 2018-2019 for both base wages and total wages, with no qualitative change in shape; nominal wage cuts are present in both periods. Surveyed and non-surveyed firms' wage-change distributions closely overlap, and entropy-weighted moments are similar across groups (Appendix H, Table H.1 and Figures H.1-H.2). Firm-level employment dynamics (hiring rates, separation rates, and net employment growth) show parallel trends for surveyed and non-surveyed firms over 2016-2020, with a moderate 2020 adjustment driven primarily by lower hiring rather than higher separations (Appendix H, Table H.2 and Figure H.3).¹⁴ These comparisons support the view that the wage-setting and adjustment mechanisms documented in this paper (morale and retention costs of pay cuts, non-substitutability of broad wage reductions and targeted layoffs, and selective layoffs) are not purely pandemic-specific.

Another concern is whether Denmark's high unionization rates drive the results. The central patterns are robust to conditioning on firm-level unionization intensity (Appendix I).

3 Conceptual Framework and Testable Predictions

This section presents a simple framework that captures the canonical view in which wage cuts and layoffs are two alternative margins for adjusting labor costs after an adverse shock. We use this framework as a benchmark rather than a maintained model: it delivers clear predictions about how wage cuts and layoffs should behave if they are close substitutes. The remainder of the paper confronts these predictions with data and uses the systematic departures to organize our alternative interpretation of why firms lay off workers instead of cutting wages.

¹⁴Separation rates are stable or slightly declining in 2020, consistent with government furlough schemes preserving existing employment matches. The paper focuses on firms that chose permanent layoffs despite furlough availability, which speaks to the non-substitutability of pay cuts and layoffs rather than to aggregate separation levels.

3.1 Firm problem

Consider a firm that employs L workers at a common base wage w .¹⁵ Abstracting from other inputs, the firm's pre-shock wage bill is $B_0 = w_0 L_0$, where w_0 and L_0 denote pre-shock wage and employment. An adverse shock (for example, a drop in demand or profitability) requires a reduction in the wage bill of at least $T > 0$ to restore profitability or satisfy financial constraints. The set of allocations (w, L) that achieve exactly the required cost reduction is

$$\mathcal{C}(T) = \{(w, L) : wL = B_0 - T, w \leq w_0, L \leq L_0\}.$$

Along any such iso-wage-bill curve, a larger wage cut (lower w) permits higher employment L :

$$\left. \frac{\partial L}{\partial w} \right|_{wL=B_0-T} = -\frac{L}{w} < 0.$$

In this simple setting, wage cuts and layoffs are mechanically substitutes: for a given required cost reduction T , a larger wage cut allows the firm to keep more workers.

More generally, suppose that adjusting wages and employment involves costs $\Phi^w(\Delta w)$ and $\Phi^L(\Delta L)$, convex and increasing in the magnitude of adjustment, where $\Delta w = w - w_0 \leq 0$ and $\Delta L = L_0 - L \geq 0$ denote the reductions in wages and employment, respectively. The firm chooses (w, L) to minimize total adjustment costs subject to meeting the target reduction in the wage bill:

$$\begin{aligned} \min_{w,L} \quad & \Phi^w(w - w_0) + \Phi^L(L_0 - L) \\ \text{s.t.} \quad & wL \leq B_0 - T, \\ & w \leq w_0, \quad L \leq L_0. \end{aligned} \tag{1}$$

In this problem, wage cuts and layoffs are two margins of adjustment that can be combined in different proportions to satisfy the cost-reduction requirement.¹⁶ At an interior solution where both margins are active, the marginal adjustment cost per dollar of wage-bill reduction is equalized across the two margins:

$$\frac{\partial \Phi^w}{\partial |\Delta w|} = \lambda L, \quad \frac{\partial \Phi^L}{\partial \Delta L} = \lambda w,$$

¹⁵This framework assumes the firm has discretion over the wage it pays. If labor markets were perfectly competitive and firms were price-takers, wages would adjust to clear the market and layoffs would not arise. Since the canonical substitution question presupposes that firms lay off workers, wage-setting discretion (arising, for example, from search frictions, bargaining, firm-specific human capital, or monopsony power) is a necessary starting point.

¹⁶We do not attempt to specify or estimate the functions Φ^w and Φ^L . The framework is intended only to formalize the notion of substitutability between wages and layoffs that is implicit in the canonical discussion.

where λ is the multiplier on the wage-bill constraint. At this interior, the firm trades off wages and workers along the budget constraint. The empirical question is how many firms reach this interior.

Let L_i^* and w_i^* denote the solutions to (1) for firm i , conditional on its shock T_i and characteristics X_i . We say that wage cuts and layoffs are *substitutes* if, holding T_i and X_i fixed, a larger wage cut is associated with a smaller reduction in employment:

$$\frac{\partial(L_{0,i} - L_i^*)}{\partial|\Delta w_i|} < 0,$$

where $L_{0,i}$ denotes pre-shock employment and $|\Delta w_i| = w_{0,i} - w_i^*$ is the size of the wage cut.

All allocations in $\mathcal{C}(T)$ satisfy the identity that wages and employment can substitute in the wage bill. The canonical substitution logic is stronger: it requires that firms can feasibly implement a broad pay cut and treat it as a practical job-saving policy. Our survey questions are designed to distinguish these notions by measuring whether firms can map a prospective pay cut into jobs saved, and by eliciting the organizational constraints and alternative layoff motives that can break that mapping.

3.2 Why substitution breaks

If the firm is not at an interior solution to (1), substitution does not operate. Three distinct breakdowns can prevent the interior from being reached:

1. *Φ^w is prohibitively steep.* If the costs of cutting wages are sufficiently high, the firm adjusts entirely through layoffs. An empirical question is whether these costs reflect exogenous barriers (legal restrictions, collective agreements) or endogenous responses to the perceived consequences of pay cuts (morale damage, retention risk, disruption to internal pay structures).
2. *Both margins active but not substituting.* Both margins respond to the adverse shock but serve different purposes: the firm cuts wages to reduce costs and lays off to reshape its workforce. Rather than trading off along the same iso-cost curve, pay cuts and layoffs co-move in distress (both increase with shock severity). This case lies outside the single-objective framework of (1): the firm's layoff decision is not governed by the same cost-minimization trade-off as its wage decision, even though both respond to the same shock.
3. *Layoffs outside the problem entirely.* Layoffs serve organizational objectives unrelated to the wage-bill target T : removing underperformers, reorganizing teams, adjusting the skill mix. A firm-wide pay cut cannot achieve what a targeted separation delivers.

For these firms, the substitution problem as formulated in (1) does not describe the layoff decision.

A revealing diagnostic is whether firms can even quantify a pay-cut-to-jobs-saved threshold: if costs are prohibitive (breakdown 1), if pay cuts and layoffs serve different objectives (breakdown 2), or if layoffs are unrelated to the wage bill (breakdown 3), firms have no reason to formulate this trade-off. Sections 5 and 6 measure these objects directly.

3.3 Testable predictions

If the substitution channel operates, four predictions follow:

Prediction 1: Pay cuts and layoffs co-move negatively. Conditional on the size of the shock and firm characteristics, firms that cut pay more should lay off less (firm level), and wage cuts for stayers should be less prevalent in firms that use layoffs (worker level). The identification challenge is that imperfectly measured shocks can generate positive co-movement even if substitution operates; our administrative tests address this through detailed controls for shock severity. We test both implications using administrative records.

Prediction 2: Tighter pay-cut constraints generate more layoffs. If binding constraints on pay cuts force firms onto the layoff margin, then firms citing stronger barriers to wage reductions should exhibit larger employment losses.

Prediction 3: Layoffs are financially motivated. If substitution is the primary channel, layoffs should overwhelmingly serve wage-bill savings rather than composition objectives (reorganization, selection, removal of underperformers) for which a firm-wide pay cut is not a relevant alternative.

Prediction 4: Managers can quantify the trade-off. If substitution is operative, most firms that lay off should regard pay cuts as job-saving and be able to state what pay reduction would have prevented layoffs. We construct an upper bound on the share of layoff activity for which substitution is even conceptually operative: layoffs must be financially motivated, the firm must not reject pay cuts as job-saving, and it must be able to quantify a threshold. Under the canonical view this share should be high.

Because our data do not deliver exogenous variation in wage-setting frictions and because aggregate wage adjustments feed back into demand and employment through general-equilibrium channels, we do not claim a causal macro decomposition of employment fluctuations. These tests diagnose whether the within-firm substitution mechanism that underlies many macro arguments is empirically operative.

4 Pay Cuts and Layoffs in the 2020 Crisis

This section documents how firms adjusted labor costs during the 2020 crisis, first examining how pay cuts and layoffs vary with shock severity, then decomposing firms by which margins they use jointly.

4.1 Adjustment margins and shock severity

Under close substitutability, firms hit by the same shock should sort into wage-cutters or layoff-users. We test this using survey responses on labor-cost adjustment strategies used in 2020, including (i) reductions in labor input: permanent layoffs, hiring reductions (reduced replacement hiring and reduced job creation), government support schemes, temporary layoffs, hours reductions, and early retirement plans; and (ii) reductions in compensation: base-wage reductions, bonus pay, fringe benefits, and promotions. Survey responses are not mutually exclusive. Throughout, “permanent layoffs” refer to employer-initiated dismissals and exclude worker-initiated quits.¹⁷ Figure 1 plots these margins against 2019-2020 revenue growth in the administrative data from FIRM.¹⁸ Panel (a) reports permanent layoffs, hiring reductions, and an “any reduction” indicator;¹⁹ Panel (b) reports base-wage reductions, reductions in other pay, and an “any pay reduction” indicator.

Figure 1 shows the central pattern: permanent layoffs (Panel (a), blue markers) and pay reductions (Panel (b), black markers) both increase with revenue-shock severity rather than substituting for each other; their incidence is similar in moderate-decline bins (e.g., 24% vs. 25% in the $[-20, -5]$ bin), and layoffs dominate under severe shocks (43% vs. 32% in the $< -35%$ bin). Panel (a) additionally documents that labor-input adjustment is broader than permanent layoffs: in the $[-20, -5]$ bin, 43% of firms report some employment/hours reduction versus 24% reporting permanent layoffs, indicating that hiring reductions account for a substantial share of adjustment.²⁰

¹⁷In the survey, “Permanent layoffs” (“permanente afskedigelser”) refer to employer-initiated dismissals and do not include worker-initiated quits (“frivillige fratrædelser”). The questionnaire separately distinguished temporary layoffs with expected reemployment and negotiated separations via early-retirement plans. Because quits were not part of the “permanent layoffs” response category and other separation types were listed separately, it is unlikely that respondents would mix quits with layoffs.

¹⁸Figure A.4 shows the distribution of firms by revenue growth. In the survey, 36 percent of the firms reported a revenue reduction between 2019 and 2020 and 40 percent reported an increase, which is in good agreement with the information from the administrative data (Figure A.3). The main reason behind the decrease in revenue was a decrease in demand, as reported by two-thirds of the firms (Figure A.5).

¹⁹Government support schemes are excluded from Panel (a) and from the “any employment adjustment” indicator because this margin is specific to the pandemic policy environment. Appendix Figure A.6 shows the same panel with government support included.

²⁰We report these margins to characterize firms’ adjustment packages in 2020; the subsequent linked survey-administrative analysis focuses primarily on permanent layoffs and pay adjustments.

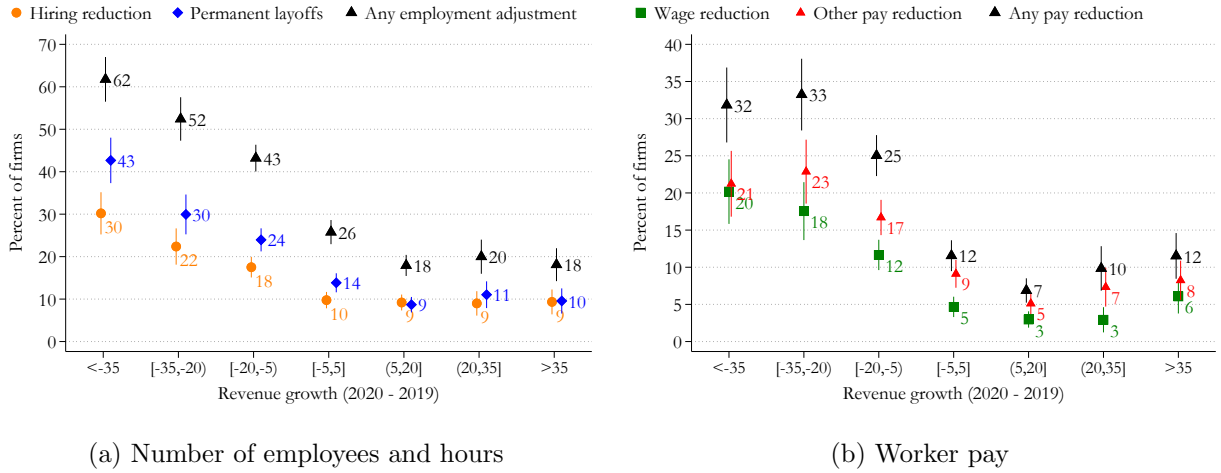


Figure 1: Firms' Labor Cost Adjustment Approaches in 2020, by Revenue Growth

Note: Panels (a) and (b) show the percentage of firms that answered “yes” to questions about the corresponding labor adjustment method. The figure also shows the standard errors of the means. The x-axis is the firm revenue growth between 2019 and 2020 in the administrative data (FIRM).

Quantitatively, both margins scale together with shock severity: among firms with revenue growth below -35% , 62% report some labor-input reduction and 32% report some pay reduction; in the $[-20, -5]$ bin, 43% and 25% ; in the $[-5, 5]$ bin, 26% and 12% . Labor-input reductions are more prevalent than pay reductions within every revenue-growth category.²¹

²¹The same patterns by revenue growth hold by firm size (Figure A.7). We find the same qualitative patterns by the growth rate in value-added (revenue minus intermediate input costs).

²²Unionization shifts the chosen adjustment margin from wages towards permanent layoffs (Section I.1). However, in Denmark, “unionization” is not what primarily explains the stated barriers to base-pay cuts (Section I.2).

²³Adjustment patterns vary across broad industries; Appendix Figure A.8 shows that accommodation and food services relies especially heavily on hiring reductions. At the same time, the figure shows that adjustment behavior is not confined to a single sector. The paper’s main regression-based results always include industry fixed effects, so our inferences are not driven by cross-industry composition differences.

²⁴Unconditionally, permanent layoffs alone (18%) are as prevalent as any form of pay reduction (17%); hiring reductions are also widespread (10% reduced replacement hiring, 9% reduced job creation). The incidence of base wage reductions is similar in the sub-samples of firms that are subject to wage floors (7%) and those that are not (8%), indicating that wage floors are not a constraint for base wage cuts in most cases in Denmark. Intensive-margin adjustments are comparatively rare: only 6% of firms report reducing hours and 6% report temporary layoffs. See Appendix Figure A.9 for the full distribution of reported adjustments. Layoffs occur even if government-sponsored furlough schemes are available and implemented: among firms with reduced revenue, layoffs were reported by 39% of those that did not use and by 22% of those that did use government-sponsored furlough schemes (Figure A.10). See Bennedsen, Larsen, Schmutte and Scur (2023) for more details on the Danish furloughing scheme during the pandemic.

In our data, pay cuts are not rare: among firms with a revenue reduction, 29% report some pay cut, including 15% that report cutting the base wage. This is consistent with Grubener and Rozsypal (2021), who document sizable base-wage losses among job stayers in revenue-shrinking firms. Pay cuts also occur in firms with stable or rising revenue, suggesting that pay adjustments can be driven by pressures beyond contemporaneous revenue declines.²⁵

Administrative data confirm that pay reductions are not rare: in Appendix J, we measure base-wage and total-pay changes among job stayers and find substantial incidence of nominal pay cuts.²⁶ More broadly, total hourly pay cuts are common in the U.S. and Europe, typically affecting 15-25 percent of job stayers in periods of low inflation (Elsby and Solon, 2019); our own meta-analysis is in Appendix Figure A.11.

Adjustment behavior differs sharply by expected shock persistence and investment plans: both expected revenue losses lasting more than a year and reduced investment plans predict higher incidence of pay cuts and layoffs (Figure A.12).²⁷ Notably, firms that are unsure about the duration of the shock are less likely to implement base-wage reductions than other firms, yet no less likely to lay off. This asymmetry is consistent with the view that firms are particularly reluctant to impose wage cuts when the need for adjustment is uncertain, given the morale and retention costs associated with cutting pay.

A natural question is what survey-reported adjustment margins add to administrative records alone. Figure 1 combines an objective shock measure (administrative revenue growth) with survey indicators of chosen adjustment margins, allowing us to relate firms' chosen margins to an objective measure of the shock. For margins with administrative counterparts (notably permanent layoffs and base-wage changes for job stayers), Appendix C compares survey and register indicators in the linked sample: the two sources co-move across revenue bins but diverge in levels, particularly for wage cuts, where the administrative measure captures incidental declines that do not reflect deliberate firm policy (Appendix Table C.1). We rely on registers throughout for realized outcomes. Survey evidence adds value because

²⁵Figure 1 shows that some firms report pay reductions even when revenue is stable or increasing, and the incidence is not perfectly monotone across positive-growth bins (e.g., the > 35% bin exceeds the [5, 20) bin). Revenue growth is an informative proxy for demand conditions, but it does not summarize profitability or all sources of labor-cost pressure (e.g., changes in input costs, productivity, or reorganization), and firms may adjust flexible pay components even absent revenue declines. Consistent with this interpretation, Danish administrative evidence shows sizable earnings and wage changes for job stayers throughout the firm revenue-growth distribution, including losses among workers in firms with positive revenue growth (Grubener and Rozsypal, 2021, Figures 4-5).

²⁶We use (i) LONN, a mandatory annual employer report on earnings components that separately identifies the contractual base wage from other pay components, and (ii) BFL, monthly administrative records of earnings and hours.

²⁷Joint F -tests confirm that the differences across expected-duration categories are statistically significant for wage reductions ($p = 0.014$), bonus reductions ($p = 0.018$), and permanent layoffs ($p = 0.001$), and marginally significant for hiring reductions ($p = 0.054$); see Appendix Figure A.12 note.

registers cannot identify deliberate hiring reductions (reduced replacement hiring / reduced job creation), which are inherently counterfactual and cannot be inferred from realized hire counts alone, or reductions in promotions, fringe benefits, and other non-wage components.

4.2 Co-occurrence of pay cuts and layoffs

If pay cuts substitute for layoffs, firms that cut pay should be less likely to lay off workers. We test this by decomposing firms into those that use one margin, both, or neither. Figure 2 shows the share of firms reporting permanent layoffs or pay cuts (wage reductions, bonus reductions, fringe benefit reductions, or fewer promotions) in each revenue growth bin, decomposed into five mutually exclusive categories: (1) layoffs without pay cuts but with other input reductions, (2) layoffs only (no pay cuts and no other input reductions), (3) layoffs with pay cuts, (4) pay cuts with other input reductions but no layoffs, and (5) pay cuts alone (no layoffs and no other input reductions). Categories (2) and (5) are directly comparable: both represent firms using a single margin in isolation.

Pay reductions were rarely used alone, especially among firms with negative revenue growth (at most 9% across negative-revenue bins). Layoffs alone are more prevalent than pay cuts alone in every revenue-growth bin (for example, 15% vs. 9% in the $[-20, -5]$ bin and 11% vs. 2% in the $< -35\%$ bin), confirming the asymmetry even under the most comparable like-for-like decomposition. The largest single category in severe-decline bins is layoffs combined with pay cuts (34-35%), indicating that firms using pay cuts are overwhelmingly also laying off workers. Together with the co-movement documented above, the firm-level decomposition suggests that pay cuts function as a complement to layoffs rather than a substitute.²⁸

5 On Pay Cuts

This section characterizes pay cuts as an adjustment margin. Pay-cut policies typically apply broadly within firms. Employers cite endogenous reasons (morale damage, retention risk, internal equity) for not using them.

5.1 Breadth of pay cuts within firms

When firms reduce pay, these reductions are typically broad-based within the firm rather than narrowly targeted. We measure for each firm the share of employees affected by (i) reductions in the contractual base wage (including fixed contractual supplements) and (ii) reductions in non-contractual supplements and/or bonuses. Figure 3 plots weighted empirical

²⁸Appendix Figure A.13 confirms that this joint-incidence pattern holds in the full administrative population: using administrative definitions of pay cuts and employment reductions, the gradient across revenue bins is similar for the population, unweighted surveyed firms, and entropy-weighted surveyed firms.

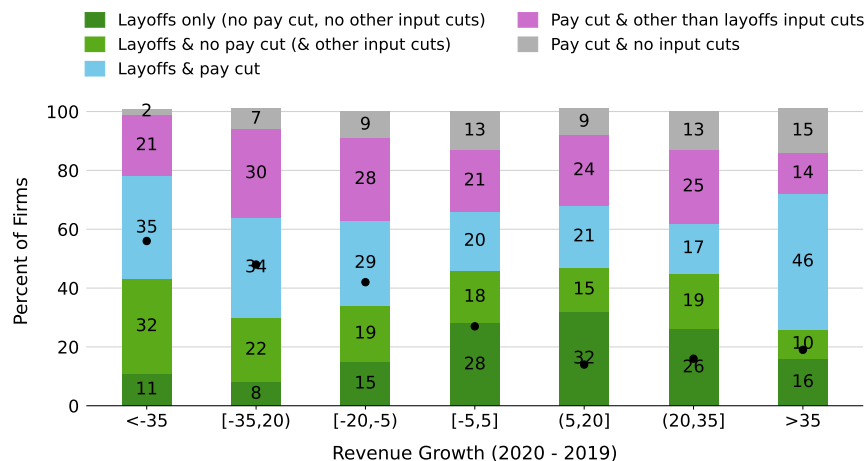


Figure 2: Firms’ Use of Layoffs and Pay Cuts, by 2019-2020 Revenue Growth

Note: Figure decomposes firms that report either permanent layoffs or pay cuts into five mutually exclusive categories: (1) layoffs without pay cuts and with other input reductions, (2) layoffs only (no pay cuts, no other input reductions), (3) layoffs with pay cuts, (4) pay cuts with other input reductions but no layoffs, and (5) pay cuts only (no layoffs, no other input reductions). Bars show shares within each revenue-growth bin; black circles show the share of firms in the bin that use permanent layoffs or any pay cuts.

cumulative distribution functions (CDFs) of these “coverage” shares, conditional on the firm reporting that it used the corresponding pay-cut method.²⁹

Two patterns stand out. First, pay cuts are rarely confined to a small subset of workers: conditional on reporting a base-wage reduction, more than half of firms report that at least 60% of employees were affected; conditional on reporting a bonus reduction, about half of firms report coverage of 60% or more. Second, this broad-based nature is present across revenue-growth categories: the average affected share is close to two-thirds and varies little across revenue-growth groups.³⁰

This broad-based pattern is a new and policy-relevant fact, and central for interpretation: it implies that pay cuts operate as a multilateral adjustment instrument, changing the compensation structure for many employment relationships simultaneously. As a result, a pay cut is often a blunt instrument for cost management. Consistent with this view,

²⁹Unlike administrative wage-change measures, which are typically constructed among job stayers to hold composition fixed, Survey Question 13 identifies the intended scope of the firm’s pay-cut policy (how widely it was applied at implementation). Administrative wage records do not directly reveal this policy scope, nor do they yield a comparable firm-level coverage measure for bonus/supplement adjustments (Appendix C).

³⁰For base-wage reductions, the average affected share is 64% in the full sample and remains close to two-thirds across revenue-growth groups. Appendix Figure A.14 reports the distributions of the size of base-wage and bonus reductions (a distinct object from the within-firm coverage shares in Figure 3). Conditional on cutting each component, the average reported bonus reduction is substantially larger than the average reported base-wage reduction (61.5% vs. 26.0%).

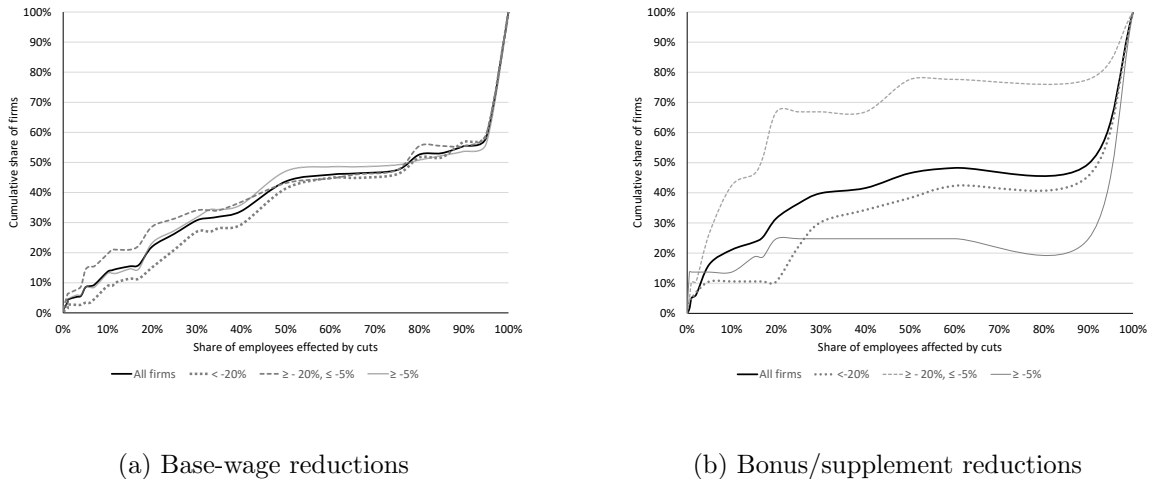


Figure 3: Cumulative Distribution of Firms by Share of Employees Covered by Pay-Cut Policies

Note: The figure plots weighted empirical CDFs of Survey Question 13 policy coverage (share of employees covered at implementation), conditional on the firm reporting use of the corresponding margin (panel (a): base-wage reductions; panel (b): bonus/supplement reductions). The y-axis reports the cumulative share of firms with coverage at most $x\%$. Lines are shown for the full sample of pay-cutting firms (“All”) and by revenue-growth groups (as in Figure 1). Results use the entropy-balancing weights described in Section 2.4.

the linked administrative data below show strong within-occupation selection in layoffs but limited scope for targeted adjustment through contractual base-wage cuts among stayers (Section 6.3).

5.2 Employer-reported reasons for not cutting pay

Why do firms refrain from cutting pay? Figure 4 reports responses to “What are the main reasons for not lowering the base wage?” (panel (a)) and the analogous question for discretionary/non-contractual supplements and bonuses (panel (b)). Respondents rate each potential reason on a five-point Likert scale; for readability and disclosure compliance, we pool responses into three bins (Agree, Neutral, Disagree), as described in the figure note. The questions are asked of revenue-decline firms that did not cut the relevant pay component.

Panel (a) shows that the dominant stated barriers to lowering the base wage are morale and retention concerns, together with “wage-as-commitment” and “base-wage reductions would not save jobs”. In particular, 80% of employers agree that base-wage cuts would harm morale and motivation and 69% agree that they would trigger quits; 68% view base pay as a commitment to employees, and 66% agree that base-wage reductions would not save jobs. Employers also distinguish between morale/motivation and direct effort/productivity concerns: agreement is substantially higher for morale than for the statement that pay cuts

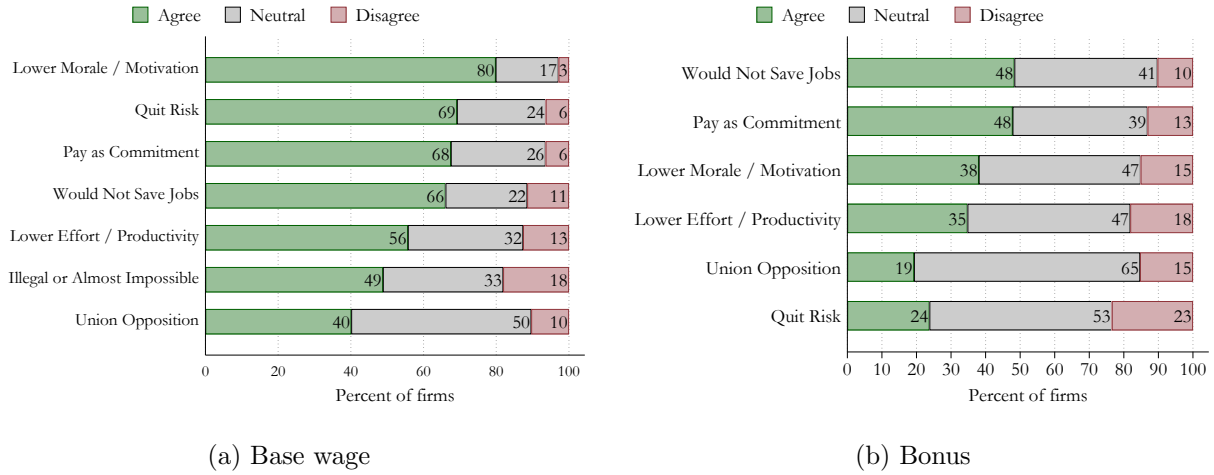


Figure 4: Reasons for Not Lowering Pay

Note: Panel (a) reports responses to: “What are the main reasons for not lowering the base wage (contractual base wage incl. fixed supplements)?” Panel (b) reports the analogous question for non-contractual supplements/bonuses. The question is asked of firms with a revenue reduction in 2020 that did not cut the base wage (panel (a); $N = 651$) or did not cut bonuses (panel (b); $N = 693$). Statements (abbreviated in the figure) correspond to: (1) It would be illegal or almost impossible to change pay (this option was not offered for bonus reduction (panel (b))); (2) The firm sees pay as a promise to its employees; (3) Pay cuts damage productivity because employees do not work so hard; (4) Pay cuts would lead employees to quit; (5) Pay cuts damage morale / demotivate employees; (6) Trade unions/employee representatives are against pay reductions; (7) Pay reductions would not save jobs. Common Likert conventions (applies to all Likert figures): Responses are elicited on a five-point Likert scale and collapsed to three categories for presentation and disclosure compliance: Agree = (Strongly agree + Agree), Disagree = (Disagree + Strongly disagree), Neutral unchanged; Percentages are computed conditional on non-missing responses (missing omitted and shares re-normalized); Items are ordered by net agreement (Agree minus Disagree).

reduce effort/productivity. Panel (b) shows that the same concerns are substantially less salient for bonus reductions than for base-wage cuts: morale, quits, and wage-as-commitment all receive lower agreement, suggesting that firms perceive greater practical flexibility in non-base pay components than in the contractual base wage (Appendix Figures A.15-A.16 confirm this contrast across subsamples).

Morale concerns are also somewhat state-dependent. When we split firms by 2020 revenue growth, agreement with the statement that base-wage cuts harm morale is slightly lower among the most distressed firms (76% in firms with revenue growth below -20% versus 81-82% in the other groups), although it remains the top-ranked reason in all groups. Combined with the higher incidence of pay cuts among distressed firms documented in Section 4.1, this pattern suggests that firms become more willing to use pay reductions when the shock is severe, even as morale and retention concerns remain salient.

Feasibility and contracting constraints receive mixed support: 60% of respondents are neutral or disagree that “trade unions are against pay reductions” and 51% are neutral or disagree that it is “illegal or almost impossible” to lower the contractual base wage (Figure 4).³¹ This helps reconcile our results with union-contract evidence from other settings (Card, 1990; Babecký et al., 2010; Davis and Krolikowski, 2025): contracting provisions can inhibit base-wage cuts, but in a high-coverage bargaining environment the operative friction often appears as a broad renegotiation constraint rather than a sharp union/non-union distinction.

The endogenous constraints have predictable gradients that align with theory (Appendix Table A.5). Quit concerns show a clear gradient: they are more prevalent in tighter labor markets, higher-wage firms and in firms with smaller revenue losses in 2020, and less prevalent in more productive firms. Union-opposition concerns are more common in high-productivity firms, routine-task firms and where a worker representative is present, and less prevalent in low-wage firms. Effort/productivity concerns are also more common in routine-task firms. By contrast, the “wage-as-commitment” and the “would not save jobs” items are only weakly related to observables. The stated barriers are similar across subsamples defined by wage-floor coverage, firm size, revenue growth, and reason for layoffs (Appendix Figures A.15 and A.16). In Section 8.5 we test whether these stated concerns predict realized pay adjustment and employment outcomes.

5.3 Implications for wage theories

The dominant barriers to base-wage cuts (morale, quits, internal equity) are largely endogenous to the employment relationship. That these barriers dominate even in Denmark’s flexible labor market carries implications for which class of wage-rigidity theory best fits the data, and for whether pay cuts can operationally substitute for layoffs. Sections 5.1-5.2 show that base-wage cuts are widely perceived as costly and, when used, typically apply to a large share of employees, making them a blunt instrument for cost reduction. Consistent with this, 66% of firms that did not cut base wages despite revenue losses agree that such cuts would not save jobs (Figure 4). An implication is that whether pay cuts can substi-

³¹Agreement with the “illegal/almost impossible” item (49%) should not be interpreted as statutory illegality. In the Danish context, the response likely reflects perceived contractual and procedural difficulty of changing the base wage (e.g., the need to renegotiate individual contracts), which many firms view as close to infeasible in practice. Base-wage cuts are not generally illegal in Denmark, and collective agreements typically set wage floors rather than fixed individual wage levels, so union presence does not mechanically prohibit wage reductions (Section 2.3). Appendix Tables I.3-I.5 show that responses to the “unions are against” and “illegal/almost impossible” items are associated but not equivalent: a sizable share of firms citing the latter do not cite union opposition, consistent with broader renegotiation frictions. Appendix I.3 summarizes how patterns change when controlling for unionization; within Denmark, unionization intensity is rarely a robust predictor of the stated barriers to base-pay cuts.

tute for layoffs in practice depends on *which* pay component firms can adjust: contractual base wages and discretionary/non-base pay differ sharply in both perceived constraints and realized flexibility, so we interpret our evidence through both wage-rigidity theories and the base-versus-non-base compensation debate.

Fair-wage, morale, and effort-based mechanisms. Efficiency-wage and gift-exchange theories posit that effort and productivity depend on the level and perceived fairness of pay (Solow, 1979; Akerlof and Yellen, 1988; Weiss, 1990). Our survey distinguishes between (i) direct productivity/effort concerns and (ii) broader morale and motivation concerns. Employers more frequently emphasize morale and quit concerns than direct productivity losses, consistent with Bewley (1998)’s distinction that effort need not be tightly linked to the level of pay even though pay cuts can harm morale. This pattern suggests that models seeking to match base-wage rigidity should allow for multilateral morale/retention costs of wage cuts, not only contemporaneous effort responses.

State dependence and fairness constraints. Our evidence also suggests that the perceived cost of base-wage cuts is not constant across states: morale objections are slightly weaker among the most distressed firms, and pay cuts are more prevalent in that group. This pattern is consistent with fairness-based mechanisms in which wage cuts become more acceptable when the firm faces acute financial pressure. In particular, Kahneman, Knetsch and Thaler (1986) document that nominal wage cuts are viewed as less unfair when a firm is losing money or threatened with bankruptcy, and Bewley (1999) reports that many observed pay cuts occur in firms in danger of closing. For macro models, this suggests that “fair-wage” or morale constraints may relax in bad states, implying that wage rigidity and its allocative implications can be shock-contingent rather than constant over the cycle.

Implicit contracts and optimal rigidity. The implicit-contracts tradition (Azariadis, 1975; Baily, 1974) offers a complementary interpretation: if risk-neutral firms insure risk-averse workers against income fluctuations, wage rigidity is not a friction but an optimal contractual feature, and layoffs can be efficient separations rather than costly consequences of rigidity. Our evidence (that constraints on pay cuts are endogenous to the employment relationship, that firms view layoffs as serving distinct objectives, and that relaxing base-wage constraints does not reduce layoffs) is broadly consistent with this class of models. The canonical macro view treats rigidity as a distortion that causes involuntary separations; the implicit-contracts view, like our findings, treats rigidity and separations as jointly chosen features of the employment relationship.

Quit risk, private information, and selection. A related class of explanations behind wage rigidities emphasizes private information and adverse selection: if workers differ in outside options or match quality that firms do not perfectly observe, then cutting

wages can induce disproportionate quitting among the most employable or highest-quality workers, making wage reductions unattractive even when they would save labor costs Hall and Lazear (1984). Our survey evidence that employers strongly expect base-pay cuts to trigger quits, together with administrative evidence that separations rise following realized base-wage freezes/cuts among continuing workers, is consistent with a quit-risk channel that makes wage cuts costly. At the same time, our survey and administrative evidence on the selective use of layoffs suggests that firms view layoffs as a more controllable margin for reshaping the workforce than broad wage reductions. Blinder and Choi (1990) also find that the fear of an employee quitting is a greater concern for firms than the fear of an employee working less, consistent with our evidence.³²

Internal pay structures. The broad coverage of pay-cut policies is also consistent with the importance of internal pay relativities and equity considerations emphasized by Bewley (1999). In this view, wage reductions are a multilateral decision about the firm’s pay structure: narrowly targeted cuts can disrupt perceived equity and invite disputes or turnover, while broad cuts magnify morale and retention costs. This helps explain why pay cuts are often perceived as a blunt and costly instrument relative to selective layoffs, and points to the need for theories of compensation policies at the organizational level rather than bilateral matches (Davis and Krolkowski, 2025; Carry and Schoefer, 2024).

Base wages versus non-base pay. Recent administrative evidence debates whether allocative effects hinge mainly on rigidity in job-stayer base wages (Grigsby et al., 2021) or whether flexibility in non-base components (bonuses, supplements, overtime premia) provides a quantitatively important adjustment margin in downturns (Kurmann and McEntarfer, 2024). Our linked survey-administrative design speaks directly to this distinction because we separately elicit policies and stated constraints for (i) the contractual base wage (including fixed contractual supplements) and (ii) discretionary/non-contractual supplements and bonuses. Taken together, the evidence points to greater practical flexibility of non-base pay: firms report substantially weaker morale/quit/commitment concerns for reducing bonuses than for cutting the contractual base wage (Section 5.2); administrative data show more downward adjustment in total hourly pay than in the base hourly wage among job stayers: in 2019, 13.3% of stayers experience a nominal cut in the base hourly wage versus 20.2% for total hourly pay; in 2020 the corresponding shares are 18.3% versus 25.9% (Appendix Figure J.1); and, conditional on cutting, reported bonus reductions are larger than reported base-wage reductions on average (Appendix Figure A.14). This contrast is consistent with loss-aversion arguments that reductions in discretionary pay are perceived as more accept-

³²The concern about quits is also in line with the literature that uses worker death events to show that new hires cannot easily replace incumbent workers (Jäger and Hening (2023)).

able than cuts to contracted wages (Kahneman et al., 1986). Moreover, among workers with positive bonus pay in 2019, those for whom the bonus share is larger are substantially more likely to experience a variable-pay cut in 2020 (Appendix Table K.3), confirming that non-base pay adjusts where it has room to adjust.

Taken together, these patterns imply that the absence of base-wage cuts does not, by itself, identify an inability to cut pay. Rather, it reflects that base-wage reductions are often a multilateral organizational intervention with substantial morale and retention costs, while layoffs can be targeted and may serve objectives beyond wage-bill savings (selection and reorganization).

6 On Layoffs

This section examines layoffs as an adjustment margin distinct from firm-wide pay cuts. Layoffs carry costs of their own, but these are costs of losing firm-specific capital, not costs to workplace relationships. The evidence below shows that firms view layoffs as a selective instrument (with limited reported disruption to remaining workers) and that a majority of crisis layoffs serve composition objectives that are less elastic to pay cuts.

6.1 Retention motives on the layoff margin

Why do firms retain workers despite revenue losses? If retention motives are match-specific (skills, rehiring difficulty), then layoffs become a last resort rather than a fungible alternative to pay cuts. Figure 5 reports firms' stated reasons for retaining employees despite a reduction in sales and other cost pressures; the battery covers skill loss and hiring frictions, team-production constraints, morale among remaining workers, access to government support, the possibility of reducing pay instead of layoffs, and reputational concerns.³³

Two motives dominate. First, firms emphasize skill retention: 94% agree that they retain employees to avoid loss of skills and knowledge, highlighting the importance of firm-specific human capital (Lazear, 2009). Second, firms worry about rehiring during recovery: 80% agree that they may not be able to find and hire again quickly when needed, pointing to anticipated search and matching costs; this emphasis is also documented in Bewley (1999).

Morale concerns receive more mixed support. While 43% of firms agree that layoffs would be detrimental to morale among remaining employees, 24% disagree. Moreover, morale motives are less prevalent among firms facing more severe revenue declines (Appendix Figure A.17). Thus, concerns about morale are present but heterogeneous. Relative to the

³³The question is explicitly framed around an adverse-shock scenario and was asked only of firms reporting a revenue decline in 2020. We therefore interpret Figure 5 as evidence on retention motives conditional on an adverse revenue shock, and should not be interpreted as describing retention motives outside the revenue-decline sample.

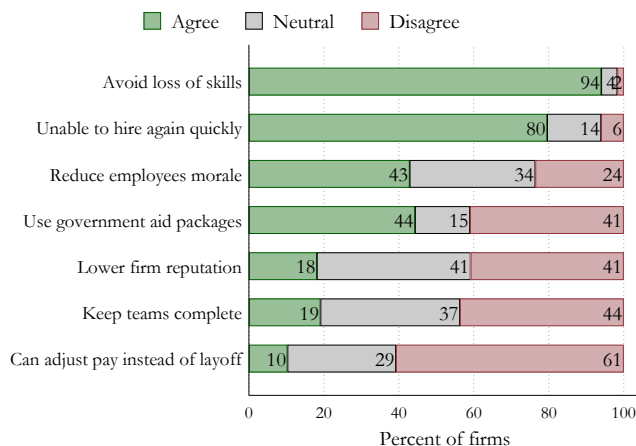


Figure 5: Reasons for Retaining Employees despite Reduced Revenue

Note: Responses to: “What were the main reasons for retaining employees despite a reduction in sales and other cost pressures? Even if you have laid off some employees, consider why you have not laid off more.” The question is asked of firms reporting a revenue reduction in 2020. Statements (abbreviated in the figure) correspond to: (1) We want to keep current employees to avoid loss of skills and knowledge; (2) We may not be able to find and hire again quickly when needed during recovery; (3) The employees work in teams, and we cannot lay off some of them; (4) Layoffs will be detrimental to morale among the remaining employees; (5) We can use government aid packages; (6) Instead of layoffs, we can reduce pay; (7) Layoffs will be detrimental to the firm’s reputation. See Figure 4 for Likert coding and normalization.

near-universal emphasis on skill retention and anticipated hiring difficulties, morale is not the most widely endorsed reason for retaining workers in the contemporaneous layoff decision.

Few firms view pay reductions as a close substitute for layoffs: only 10% agree that pay can be reduced instead of layoffs, while 61% disagree. Section 7.1 reinforces this pattern among firms that actually laid off workers, who overwhelmingly do not view a firm-wide pay cut as an operational job-saving substitute when asked directly.

Table A.6 relates these motives to firm characteristics. Most reasons show limited systematic correlation with observables. The main exception is skill retention: because the routine task index is inversely related to workforce skill intensity, firms with more skilled workforces place significantly greater weight on retaining employees to preserve firm-specific human capital, consistent with the prediction that skill-retention motives should be strongest where workers are hardest to replace.

Because this battery was fielded in the pandemic, one might worry that the headline retention motives in Figure 5 reflect a uniquely pandemic environment (lockdowns and an anticipated rapid rebound). To assess this, Online Appendix L examines heterogeneity in agreement with the two leading motives (avoiding skill loss and concerns about rehiring) by (i) lockdown-exposed industries and (ii) firms’ expectations about the duration of the revenue decline. The results show that these motives are not concentrated only in lockdown-

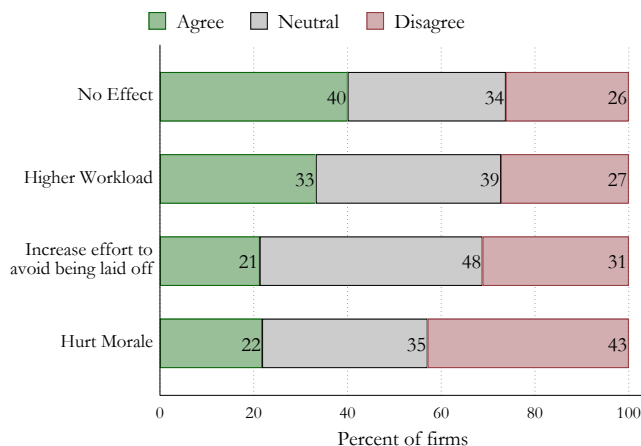


Figure 6: The Perceived Consequences of Layoffs on the Remaining Employees

Note: Responses to: “How have layoffs affected the remaining employees?” The question is asked of firms that laid off employees in 2020. Statements (abbreviated in the figure) correspond to: (1) Employees have a higher workload as there are fewer; (2) Employees work harder to avoid being laid off; (3) Layoffs hurt morale and work ethics among the remaining employees; (4) There is no effect on the remaining employees. See Figure 4 for Likert coding and normalization.

exposed sectors and are not stronger among firms expecting short-lived shocks. If anything, differences across these pandemic-specific dimensions are modest once we condition on shock severity and firm characteristics.³⁴

6.2 Limited spillovers from layoffs

Do layoffs create costly spillovers onto remaining employees? If morale and workload effects are limited, layoffs become a more attractive margin than broad pay cuts, which Section 5.2 showed are perceived as highly damaging to morale. Figure 6 reports layoff firms’ responses to: “How have layoffs affected the remaining employees?”

When asked about the perceived consequences of layoffs for remaining employees, only 22% of layoff firms agree that layoffs hurt morale and work ethics, while 43% disagree. We interpret this as evidence that many employers do not perceive large immediate morale losses from layoffs. Importantly, our survey does not separately elicit short-run versus long-run morale effects, so these responses need not contradict Bewley (1999, Table 13.11), who emphasizes that morale effects may emerge and persist in the longer run. Morale costs are further attenuated when layoffs are selective: Appendix Figure A.18, panel (b) shows that

³⁴We find limited support for the view that worker representation materially constrains layoffs through alternative cost-saving solutions: 15% agree, 28% disagree, and 57% are neutral to the statement “A union representative helps reduce the number of layoffs by finding alternative solutions to reduce wage costs (re-organization, wage reduction, etc.)” (Figure A.19).

layoffs attributed to low performance are associated with a less detrimental reported morale effect.³⁵

Beyond morale, a non-trivial number of firms report operational effects on the remaining workforce. Thirty-three percent of layoff firms agree that layoffs increase workload for remaining employees, while only 21% agree that layoffs increase effort because employees work harder to avoid being laid off. Consistent with standard incentive effects, reported “work-harder” effects are less common when labor market conditions are more favorable to employees (higher labor market tightness; Table A.7). This pattern (higher workload but not higher effort) also parallels Bewley (1999, Table 13.11). To complement these attitudinal responses, we use linked administrative data to study subsequent retention of remaining workers following layoffs and pay adjustments (Section 8.3).

6.3 Selective nature of layoffs

If layoffs are a targeted margin, firms should be able to select who leaves. Indeed, 73% of firms agree (the most strongly endorsed reason in the battery of Figure A.20) that layoffs give better control over who leaves. Net agreement is 77 percentage points among firms citing low performance as a layoff reason, versus 55 in the full sample (Figure A.20).

Using the survey-administrative link, we quantify this selectivity in employer-employee registers. We estimate worker-level models with firm \times occupation fixed effects, so that identification comes from within-firm, within-occupation comparisons. The administrative evidence shows that layoffs are strongly selective within job categories: workers with higher pre-pandemic base wages relative to coworkers in the same firm and occupation, and workers with longer tenure, are significantly less likely to be laid off (Appendix Table K.1). This is consistent with firms using layoffs to target separations toward workers with weaker attachment or lower implied value even within narrowly defined job cells.

Among firms that agree that “layoffs give better control over who leaves” (Figure 9), the negative selection is stronger: bonus recipients are particularly protected from separations relative to coworkers in the same firm and occupation (Appendix Table K.4). This provides a concrete mechanism for how firms exercise control: layoffs allow targeted separations within narrowly defined job cells.³⁶

To benchmark this against pay adjustments, we examine selection in pay changes among workers who remain employed at the firm in 2020. We find that realized base-wage cuts, in contrast to layoffs, are not strongly selective on pre-pandemic relative wages or tenure

³⁵Results are similar across firm size and revenue growth subsamples (Appendix Figure A.18, panels (c) and (d)).

³⁶The administrative data do not contain direct productivity ratings. We therefore use pre-pandemic bonuses and within-firm wage premia as natural proxies for worker value and performance.

within firm \times occupation cells (Appendix Table K.1). The pattern differs, however, when we broaden the definition to base-wage *non-increases* (cuts or freezes combined): here, workers who received a bonus in 2019 are less likely to experience a non-increase in 2020 (Appendix Table K.2), suggesting that higher-valued workers are partially shielded from nominal freezes even if not from outright cuts.

6.4 Opportunistic layoffs in recessions

When layoffs serve composition objectives (eliminating specific roles, removing underperformers, restructuring), a firm-wide pay cut does not achieve the same operational goal, even though both reduce costs. This subsection documents that such composition-driven layoffs are common: only 41% of layoff firms cite reduced sales as a reason,³⁷ and a majority view a crisis as an opportune time for selection and reorganization. Consistent with these composition motives being operative, firms with nonnegative revenue growth are more likely to report non-sales layoff reasons (Appendix Figure A.22d). Pay cuts are especially unlikely to be viewed as an alternative for these non-financial layoffs.

A downturn may make layoffs more attractive not only because sales fall, but also because the opportunity cost of managerial time is lower and it may be easier to implement reorganization and selection (Caballero and Hammour (1994); Koenders and Rogerson (2005)). A complementary view is that the perceived fairness/acceptability of layoffs can depend on context: layoffs may be viewed as more acceptable when framed as a response to adverse conditions (Charness and Levine (2000); Kuhn and Osaki (2022)). To assess whether firms view downturns as changing the feasibility/acceptability of layoffs for reorganization and selection, we ask revenue-decline firms to indicate agreement with four statements capturing these mechanisms. Figure 7 reports the responses.³⁸

Firms express substantial support for these mechanisms: 56% agree that it is more acceptable to lay off less able employees in bad times, 54% agree that it is easier to change tasks/increase effort in bad times because quits are less likely. Forty-seven percent agree that firms reorganize more in bad times than in good times. Views on laying off “overpaid” employees are more mixed overall (40% agree, 36% neutral), but among the subset of firms that list overpay as a layoff reason, agreement rises (Appendix Figure A.21), consistent with evidence of cyclicalities in the composition of separations (e.g., Mueller, 2017; Barreto and Merkl, 2025).³⁹

³⁷Among permanent layoffs, 64% cite reduced sales (Appendix Figure A.22).

³⁸Our several survey batteries use skip logic to keep questions interpretable and reduce respondent burden. Questions explicitly framed as “despite a reduction in sales/cost pressures” (Figure 7 and Appendix Figure A.21) are asked only of firms reporting a revenue decline in 2020 and should be interpreted as conditional-on-downturn responses.

³⁹Table A.8 reports associations between firm characteristics and these attitudes.

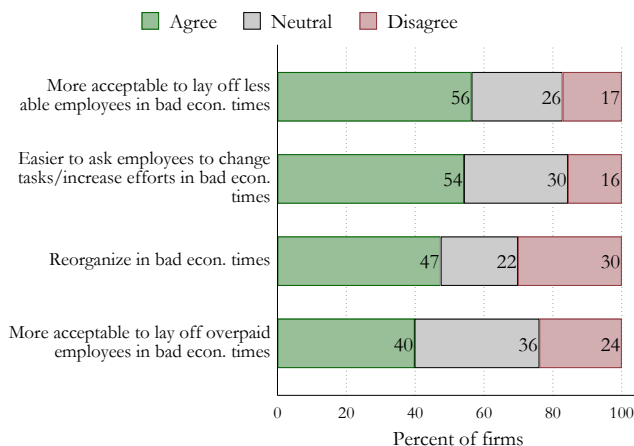


Figure 7: Is Crisis an Opportune Time for Layoffs?

Note: Responses to: “Do you agree with the following statements? Note: Even if you have laid off some employees, consider why you have not laid off more.” (see y-axis labels). The question is asked of firms reporting a revenue reduction in 2020. Statements (abbreviated in the figure) correspond to: (1) Management has less focus on efficiency and cost reductions during good times, and therefore the firm reorganizes itself during times of bad economic conditions; (2) It is more acceptable to lay off the less able employees in bad times (labeled “bad matches” in the figure); (3) It is more acceptable to lay off employees who are highly paid relative to their productivity in bad times; (4) It is easier to ask employees to change their tasks / increase their work effort in bad times as employees are less likely to quit. See Figure 4 for Likert coding and normalization.

Figure 7 is related to Bewley (1999, Table 13.5), but the objects differ. Bewley asks whether aggregate labor market conditions enter the decision to *initiate* layoffs; our items ask whether a downturn changes the acceptability and feasibility of using layoffs for *selection and reorganization*. These are consistent: even if the need to reduce employment is driven primarily by firm-specific demand conditions, slack labor markets can reduce workers’ outside options and shift fairness perceptions, thereby making layoffs a more practicable tool for targeted selection and reorganization. We therefore interpret Figure 7 as evidence about how the nature of layoffs changes in recessions, not about whether macro conditions mechanically enter firms’ layoff decision rules.

If downturns facilitate selection and reorganization, they should also pull forward layoffs that would otherwise have occurred later. To quantify this, we ask firms directly: “How many of these layoffs would have taken place in 2020 or over the next two years if there had not been a pandemic?” (Figure 8). Forty-four percent report 10 percent or fewer, but 56% report that more than 10% of layoffs would have occurred anyway. Twenty-four percent report that all layoffs would have occurred even absent the pandemic; on average, firms

report that 34% would have occurred within the next two years.⁴⁰⁴¹ Consistent with this interpretation, the reported share is larger when layoffs are attributed to non-sales reasons (Figure 8b) and among firms with higher revenue growth (Appendix Figure A.23b; Appendix Table A.10).⁴²

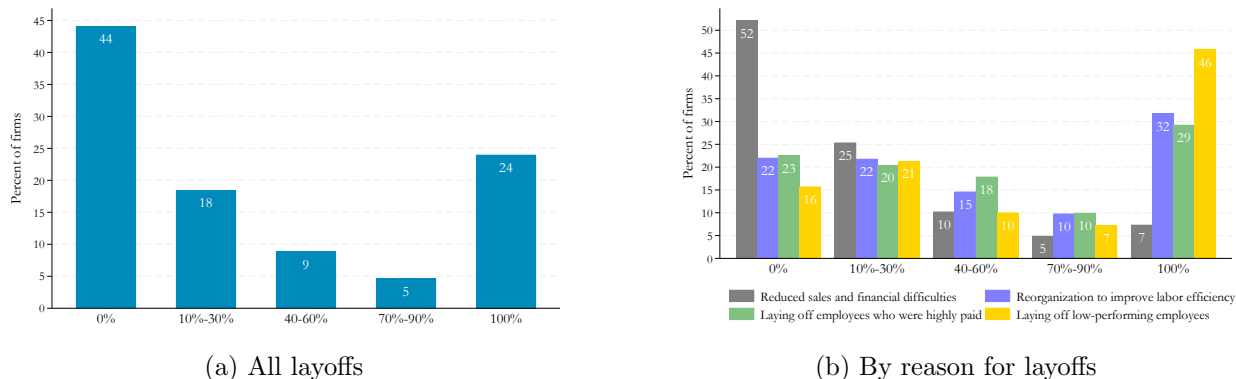


Figure 8: Share of Layoffs that Would Have Occurred Even without the Pandemic Recession

Note: The figure reports responses to the question, “How many of these layoffs would have taken place in 2020 or over the next two years if there had not been a pandemic?”. The question was put to firms that reported having laid off employees in 2020.

If composition-driven layoffs target specific workers rather than aggregate labor costs, pay cuts should be an especially poor substitute for them. We test this by classifying permanent-layoff firms into three groups by stated layoff reasons: (1) reduced sales only; (2) reduced sales plus other reasons; and (3) non-sales reasons only. If opportunistic layoffs reflect selection/reorganization rather than a mechanical need to reduce the wage bill, then pay cuts should be a less relevant alternative in group (3) than in group (1).

Consistent with this hypothesis, among firms with permanent layoffs, 50% of firms in group (1) also implemented pay cuts, compared to 29% in group (3). Rejection of pay cuts as an alternative is also stronger in group (3): net disagreement with “Instead of layoffs, we can reduce pay” is 40% in group (3) versus 24% in group (1) (Figure 5), and 82% of group (3) firms agree that pay cuts would not have saved jobs (statement (1) in Figure 9) versus 71% in group (1). Taken together, these patterns suggest that when layoffs reflect

⁴⁰Focusing on permanent layoffs, the distribution of firms is as follows: 0%: 42%; 10-30%: 23%; 40-60%: 12%; 70-90%: 6%; 100%: 16%.

⁴¹Further evidence that a crisis is an opportune time for layoffs comes from the observation that many firms reported permanent layoffs despite the availability of government-sponsored furlough schemes (Appendix Figure A.10).

⁴²Retrospective counterfactual questions are subject to justification bias; we interpret the levels cautiously but note that the cross-sectional gradients (higher shares among non-sales-motivated and higher-growth firms) are harder to explain by uniform rationalization.

reorganization and selection motives, pay cuts are especially unlikely to be perceived as an operational substitute.

6.5 The layoff margin: costs and benefits

The evidence in this section highlights why layoffs need not be a close operational substitute for firm-wide pay cuts. On the cost side, firms’ dominant retention motives emphasize the loss of skills/knowledge and hiring difficulties during recovery (Figure 5), implying that separations are expensive when firm-specific human capital matters. On the benefit side, layoffs are a targeted instrument: firms report that layoffs provide better control over who leaves, and linked administrative data confirm this: within the same firm \times occupation cell, separations select on relative wage, tenure, and bonus receipt, whereas base-wage cuts show no such targeting. Meanwhile, firms report limited immediate adverse effects on remaining workers’ morale or effort (Figure 6). This combination (targeted separations with limited reported within-firm disruption, but potentially large human-capital costs) helps explain why layoffs can be preferred to broad pay reductions even when pay cuts are mechanically job-saving. Finally, a majority of crisis layoffs serve composition objectives that are less elastic to pay cuts.

7 Do Firms Operationalize the Wage-Layoff Trade-Off?

For the canonical substitution channel to be operational, firms must (i) view pay cuts as genuinely job-saving, (ii) be able to quantify a pay-cut-to-jobs-saved threshold, and (iii) act on that threshold. This section tests all three conditions using direct survey evidence from layoff firms. Each fails for the majority: most firms reject the premise that pay cuts would have saved jobs, 61% cannot quantify a threshold, and those that name one do not implement pay reductions anywhere near it.

7.1 Do firms view pay cuts as job-saving?

We ask all firms that report having laid off workers in 2020: “Why did you not lower pay instead of laying off employees?”

For most firms, the cost-benefit calculus tilts away from pay cuts and toward layoffs. Firms agree that (1) pay reductions would not have saved jobs (73% agree, 10% disagree; Figure 9), (2) pay reductions hurt morale and productivity more (68% agree, 7% disagree), (3) layoffs give better control of who leaves (73% agree, 5% disagree), and (4) layoffs save more money than pay reductions (58% agree, 8% disagree).⁴³

We note that a non-trivial minority (10%), however, disagrees with statement (1), that is, believes pay reductions could have saved jobs. These firms are substantially more likely

⁴³Figure A.20 tabulates this question by firm size, revenue growth, and type of layoff.

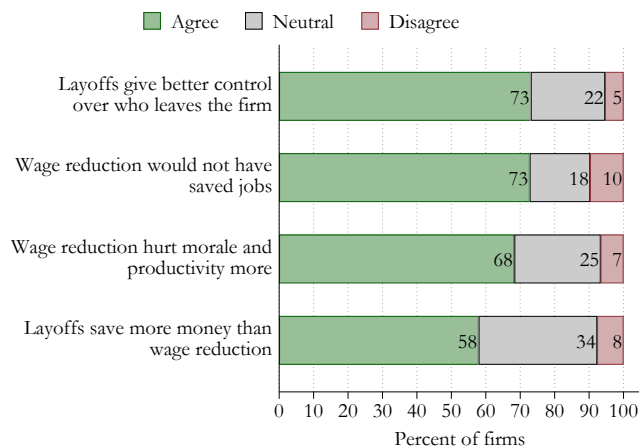


Figure 9: Reasons for Layoffs instead of Pay Cuts

Note: Responses to: “Why didn’t you lower pay instead of laying off employees?” The question is asked of firms that laid off employees in 2020. Statements (abbreviated in the figure) correspond to: (1) Pay cuts would not have saved jobs; (2) Pay cuts would hurt morale and productivity more than layoffs; (3) Layoffs give better control over who leaves the firm; (4) Layoffs save more money than pay cuts do. See Figure 4 for Likert coding and normalization.

to report pay reductions (35% versus 14% among firms that agree), suggesting that for this subset, pay cuts might be viewed as an operative alternative to layoffs.

7.2 Hypothetical pay-cut thresholds

If pay cuts and layoffs are close substitutes, firms should be able to identify a pay-cut threshold that would have saved jobs. We ask all firms that laid off workers in 2020 what reduction in total pay costs could have prevented layoffs (Figure 10). We included this question as a deliberately simple “back-of-the-envelope” thought experiment, mirroring a common way the literature frames the wage-layoff trade-off, to assess whether firms perceive a single firm-wide pay-cut threshold as a meaningful and operational counterfactual for “jobs saved.” We added “Do not know” as an explicit option to prevent forcing respondents into noisy guesses that would look informative but actually add measurement error.

Sixty-one percent of firms respond “Do not know” to the question of what reduction in total pay costs could have prevented layoffs (Figure 10, Panel (a)). For many firms, the counterfactual mapping from an across-the-board pay reduction to jobs saved is not readily quantifiable: feasible pay adjustments depend on heterogeneous contracts, pay components, and perceived morale/retention costs, and layoffs may serve reorganization/selection objectives that are not close substitutes for pay reductions.

The “Do not know” response is informative: it is concentrated among firms whose layoffs serve objectives other than wage-bill savings. Firms reporting layoffs due to reduced sales

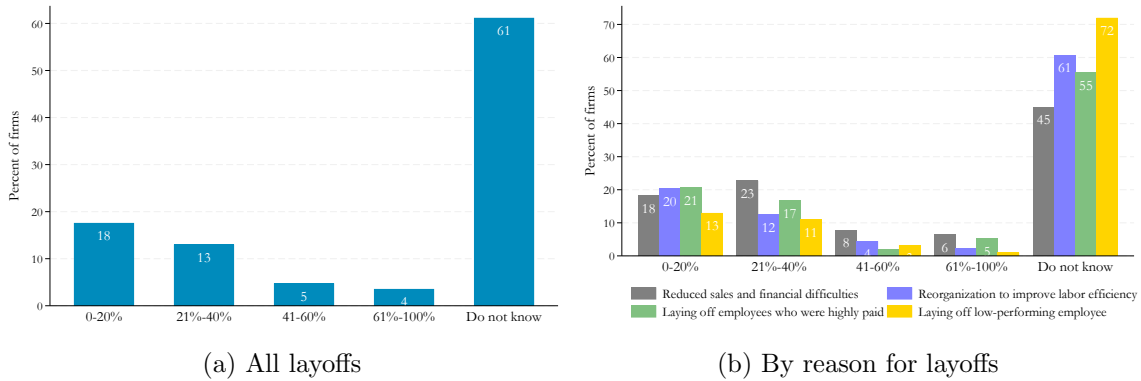


Figure 10: What Reduction in the Total Wage Costs Could Have Prevented Layoffs?

Note: The figure reports responses to “What reduction in the total wage cost (base pay and bonuses) could have prevented layoffs?” The question is put to respondents that laid off workers in 2020. The options are: 0-20 percent; 21-40 percent; 41-60 percent; 61-80 percent; more than 80 percent; Do not know.

or financial difficulties are less likely to answer “Do not know” than firms reporting other layoff motives (Figure 10, Panel (b)), consistent with wage-bill reasoning being more salient in financially motivated firms.⁴⁴ Similarly, firms that experienced negative revenue growth are less likely to answer “Do not know” (Figure A.24, Panel (b)). At the same time, “Do not know” remains substantial even in financially distressed layoff firms, underscoring that the jobs-wages counterfactual is still difficult to summarize with one scalar threshold even when wage-bill savings are plausibly relevant, consistent with pay cuts being a feasibility-constrained and heterogeneous margin rather than a close substitute.

Firms that name a threshold do not act on it. Among the 39% that provided a numerical response (Figure 10, Panel (a)),⁴⁵ there is a positive gradient (firms reporting higher thresholds are more likely to have cut pay), but the levels of realized pay adjustment are strikingly low relative to the stated thresholds (Appendix Table M.2 and Figure M.1). Among firms that themselves report a job-saving pay cut of 0-20%, only 24% implemented any pay reduction at all, and the average pay-cut intensity (combining the depth of the cut with the share of workers affected) was 6.7%, far below what these firms themselves identified as job-saving. Among financially motivated layoff firms in the same threshold group, the figures are only modestly higher: 34% and 10.1% (Appendix Table M.2, Panel B).

The threshold is not an operational decision rule, even where it should be easiest to implement. Firms reporting a 0-20% threshold, who under the canonical view should be the most substitution-ready, are barely distinguishable from firms responding “Do not know”:

⁴⁴See also Appendix Table A.11.

⁴⁵Firms that laid off due to reduced sales are more likely to report a larger threshold (Appendix Table A.12).

cut intensity is 6.7% versus 5.0% and incidence is 24% versus 15%, and conditioning on shock severity, industry, and firm controls does not change this pattern (Appendix Table M.3). The gradient is real only at the top: firms reporting high thresholds (41-60% and 61-100%) have substantially higher realized pay-cut activity (cut intensity of 28-29% and incidence of 54-60%). The difference between the 0-20% group and “Do not know” firms reflects whether the firm can engage with the hypothetical question, not whether it treats pay cuts as an operational policy.

We calculate bounds on the share of layoff activity for which the substitution counterfactual is conceptually relevant, that is, the pre-conditions for condition (iii) to apply, by requiring simultaneously that the layoffs are financially motivated, that the firm does not reject pay reductions as job-saving (in the Figure 9 battery), and that the firm provides a quantifiable threshold rather than responding “Do not know.” Under a generous definition (in which firms that neither agree nor disagree with the statement that “pay reductions would not have saved jobs” are counted as potentially open to substitution), at most 23% of layoff activity (firm- or job-weighted) satisfies all three eligibility criteria; under a stricter definition requiring active disagreement, only 5% does (Appendix Table M.1). The remainder either laid off for non-financial reasons (reorganization, selection), themselves state that pay cuts would not have saved jobs, or cannot quantify a threshold, none of which is consistent with an operative wage-layoff trade-off.

A minority of firms, however, behaves consistently as if pay cuts are an operative alternative to layoffs. Firms that disagree that a pay reduction would not have saved jobs are more likely to provide a hypothetical job-saving pay-cut amount rather than answering “Do not know” (72% versus 36%). Consistent with this, among revenue-decline firms asked why they retained workers despite reduced sales or other cost pressures, 17% agree with the statement “Instead of layoffs, we can reduce pay” (Figure 5); these firms are much more likely to implement pay reductions (51% versus 6%) and more likely to answer the hypothetical pay-cut question (70% versus 45%). We interpret this evidence as supporting a heterogeneous-feasibility view: pay cuts can be an operative alternative to layoffs in some firms, yet for most firms layoffs are not treated as a close, well-defined substitute for a firm-wide pay reduction that can be summarized by a single scalar.

8 Administrative Evidence on Wage-Layoff Interaction

A key advantage of our linked survey-administrative data is that we can move beyond stated policies and observe realized outcomes. This section uses the administrative records to test whether pay cuts and layoffs interact as the canonical substitution view predicts; on the margins we examine, the substitution prediction fails.

8.1 Do layoff firms spare stayers’ base wages?

If pay cuts and layoffs are substitutes, firms that lay off workers should need less base-wage adjustment for those who remain: the headcount reduction already achieved the wage-bill savings. We test this prediction using administrative base-wage changes for job stayers in layoff versus non-layoff firms, conditional on the severity of the revenue shock. The prediction fails: in no revenue bin do stayers in layoff firms experience fewer base-wage cuts.

We use the linked employer-employee registers to study job stayers (workers employed at the same firm in both 2019 and 2020). For each stayer we compute the percent change in the contractual hourly base wage (including fixed contractual supplements) between 2019 and 2020 and classify outcomes into wage cuts ($\Delta w < -2\%$), freezes ($|\Delta w| \leq 2\%$), and increases ($\Delta w > 2\%$).⁴⁶ To distinguish the role of layoffs from underlying shock severity, we estimate worker-level probit models that interact a layoff indicator with revenue-growth bins, conditioning on industry fixed effects and firm-level controls. The key objects are within-bin contrasts: the difference in the predicted probability of a wage cut (or freeze) between stayers in layoff and non-layoff firms facing the same revenue shock.

In no revenue bin do stayers in layoff firms experience fewer base-wage cuts than stayers in non-layoff firms (Table N.2).⁴⁷ The within-bin layoff differential in wage-cut incidence is positive (stayers in layoff firms are more likely to experience wage cuts) in three of five revenue bins: 11.4 percentage points ($p < 0.001$) for moderate revenue declines, 5.4 percentage points ($p < 0.001$) at neutral revenue growth, and 4.6 percentage points ($p < 0.01$) under severe declines, and is indistinguishable from zero in the remaining two. The differential is largest in moderate rather than extreme distress because under the most severe revenue collapses, even non-layoff firms cut base wages at elevated rates, compressing the layoff-non-layoff gap. The results are robust to a finer 7-bin revenue classification (Table N.3) and to replacing the layoff dummy with layoff-intensity categories (Table N.4).⁴⁸

The two margins serve operationally different purposes and under distress co-move in the same direction rather than trading off. Layoffs are targeted separations driven by reor-

⁴⁶Appendix N provides full details on the linked sample construction, the wage-change measure, and the layoff and revenue-shock definitions.

⁴⁷Because layoff firms selectively separate lower-wage workers (Section 6.3), the remaining stayer pool may have higher average wages than stayers in non-layoff firms. If higher-wage stayers are less likely to receive cuts, this compositional selection biases the comparison *against* finding co-movement, making the positive layoff differential a conservative estimate.

⁴⁸Our baseline models are estimated at the worker level, so the contrasts describe the experience of a randomly drawn stayer, the natural weighting for the question of what happened to remaining workers’ pay. Firm-equal-weighted specifications yield qualitatively similar patterns. We focus on the wage-cut margin because the combined “cut-or-freeze” measure sends mixed signals: under severe distress, stayers in layoff firms are 10.0 percentage points less likely to be frozen but more likely to experience outright cuts, so the two components move in opposite directions.

ganization and selection; base-wage cuts affect the remaining workforce broadly and indiscriminately. Because these instruments address different dimensions of the firm’s adjustment problem, the evidence is inconsistent with a mechanical trade-off between them, and under acute distress, both get activated simultaneously.

8.2 Do no-layoff firms compensate with deeper pay cuts?

If pay cuts and layoffs are substitutes, firms that experienced revenue declines but laid off few or no workers should compensate by cutting pay more aggressively. They do not: conditional on shock severity, no-layoff firms show no systematically larger pay reductions than firms that used layoffs.

We classify firms as “few/no layoffs” if their administrative layoff rate is below 2% of 2019 employment and estimate regressions of firm-level stayer pay adjustment (base wages, variable pay, total pay, and the share of workers with base-wage cuts) on a few/no-layoff indicator interacted with revenue-decline bins, controlling for industry fixed effects and firm characteristics (Appendix O). Conditional on shock severity, none of the few/no-layoff coefficients or interactions are statistically significant across any pay measure among revenue-decline firms (base wages, variable pay, total pay, and the share of workers with base-wage cuts; Appendix Tables O.1 and O.2). That is, firms that forgo layoffs do not compensate by cutting pay more deeply. We also validate the survey-reported pay-cut magnitudes against the administrative data: survey-reported intensity significantly predicts administrative pay cuts ($\hat{\pi} = 0.099$, $p < 0.01$), and this mapping does not differ significantly between the two groups (Appendix Table O.3).

8.3 Do stayers who accept wage cuts stay longer?

Given worker-level substitution between pay cuts and layoffs, if wage cuts serve as an alternative to layoffs, workers who accept a pay reduction should stay longer: the cut preserves the employment relationship. Among workers who remain at layoff firms, do those who received base-wage cuts stay longer than those who did not? The prediction fails: base-wage changes have no predictive power for retention at any horizon. We document this by following stayers in layoff firms beyond 2020 in the linked administrative records.⁴⁹

Retention among stayers is high but far from complete: 93.5% stay at least one year (through 2021), 78.4% stay at least two years (through 2022), and 68.3% stay at least three years (through 2023), implying a cumulative three-year attrition rate of 31.7%. These rates are nearly identical across wage-change groups: three-year retention is 66.7% for workers

⁴⁹Appendix P provides details on sample construction, variable definitions, descriptive retention patterns (Figure P.1), and the retention regressions (Table P.2).

who received a pay cut, 70.4% for those with a wage freeze, and 67.5% for those with an increase (Appendix Figure P.1).

Within firms, base-wage changes do not predict differential retention. Specifications that include firm fixed effects, thereby comparing workers who received cuts, freezes, or increases at the same firm, show coefficients indistinguishable from zero at every horizon (Table P.2). Workers who received base-wage cuts separate at the same rate as coworkers who did not.

Wage cuts do not buy differential retention within the firm. Contrast this with layoffs: the selection evidence in Section 6.3 shows that firms precisely target who is laid off based on relative wages and bonuses within occupation cells. Wage cuts offer no such targeting on either the adjustment or the retention margin. This asymmetry (layoffs give firms control over who leaves, wage cuts give firms no control over who stays) reinforces the non-substitutability that firms report in Section 7.1.

8.4 Do slack markets shift firms toward pay cuts?

Bewley (1999, p. 230) argues that firms internalize workers' poor outside options in slack markets. Conditional on the same revenue shock, firms in slacker labor markets should therefore lay off fewer workers. If pay cuts and layoffs are substitutes, those same firms should also cut pay more to offset the retained workers. The layoff prediction holds; the pay-cut prediction does not. We test this by interacting seven revenue-growth bins with terciles of firm-specific labor-market tightness and estimating linear probability models for permanent layoffs and base-wage reductions, with firm controls and industry fixed effects (Appendix Q).

Among firms with the most severe revenue declines ($< -35\%$), those in slack labor markets are 18.9 percentage points less likely to use permanent layoffs than comparable firms in tight markets ($p = 0.048$). The effect is marginally significant in the moderate-decline bin ($[-20, -5]\%$, $p = 0.086$) and absent elsewhere. By contrast, slackness has no significant effect on base-wage reductions in any revenue-growth bin.

The finding that slack reduces layoffs is not in conflict with Section 6.4's evidence that crises are an opportune time for layoffs. The distinction is between time-series and cross-sectional variation: "crisis is opportune time" explains why layoffs spike in downturns (restructuring firms use the recession as cover), while the slack result is cross-sectional; conditional on the same revenue shock, firms in slacker local markets retain more workers. The two forces operate on different types of layoffs: aggregate downturns bring forward opportunistic layoffs; local slack holds back adjustment layoffs because the perceived cost of firing is highest in slack markets.

Slack shifts the layoff margin but leaves the pay-cut margin untouched: pay cuts and layoffs appear to respond to different considerations.

8.5 Do pay-cut constraints generate more layoffs?

If morale concerns prevent firms from cutting pay, and pay cuts and layoffs are substitutes, then firms with stronger morale concerns should substitute toward more layoffs. If instead pay cuts and layoffs co-move, then worried firms should do less of both. We test whether stated worry about pay-cut consequences predicts fewer pay cuts and more layoffs. The first holds; the second reverses sign. Worried firms lay off fewer workers, consistent with co-movement rather than substitution.

We construct firm-level measures of worry about pay-cut consequences from two survey modules capturing morale, quits, and productivity-type concerns.⁵⁰ We relate these worry measures to a broad set of outcomes: survey-reported base-wage and bonus reductions, survey-reported cut intensity, administrative base-wage non-increases and cuts among job stayers, and administrative layoff rates. Appendix R reports the construction of the worry indices and the full regression results.

For the morale barrier measure elicited from layoff firms, higher worry is associated with a lower probability of reporting base-wage reductions, even after controlling for revenue-shock severity and baseline firm covariates (-8.2 percentage points, $p < 0.05$). When the threshold is broadened from Strongly Agree to Agree or Strongly Agree, worried firms also report more bonus cuts and lower cut intensity, suggesting partial substitution from base wages toward bonuses.

Conditional on shock severity, worried firms do not lay off more workers. Under this broader threshold, higher worry predicts a significantly lower layoff rate (-12.5 percentage points, $p < 0.01$). The stated constraint is real: firms that worry more about morale consequences do cut base pay less often. But those same firms do not substitute toward layoffs; they lay off fewer workers, not more.

For the morale barrier measure elicited from revenue-decline firms that did not cut base pay, none of the administrative outcomes is significantly associated with the constraint. Morale is a real, binding constraint on pay cuts, but binding pay-cut constraints do not generate substitution toward layoffs.

⁵⁰Because of survey skip logic, the relevant worry items come from different question batteries and therefore apply to different subsamples: (i) among layoff firms, the battery on why wages were not reduced instead of layoffs, and (ii) among revenue-decline firms that did not report base-pay cuts, the battery on reasons for not lowering base pay.

8.6 Do stated wage-cut constraints predict employment losses?

The canonical wage-rigidity view predicts that firms with tighter constraints on base-wage cuts should experience larger employment losses and slower recovery. We test this prediction using our survey-administrative link. Section 8.5 tested a related prediction cross-sectionally: whether morale concerns redirect adjustment toward layoffs at the time of the shock. Here we ask the dynamic question: do firms with tighter pay-cut constraints experience worse employment trajectories over time? Because the constraint measures are collected after the 2020 experience, we treat them as proxies for latent firm-level wage-setting frictions rather than exogenous treatment variation, and interpret the results as disciplined descriptive evidence. Firms that experienced large employment losses may retrospectively report stronger constraints to rationalize outcomes, or the experience itself may shift attitudes toward pay adjustment.

We construct three firm-level indicators of stated wage-cut constraints from separate survey batteries (Appendix S). The first, “morale-constrained” (non-cutter sample), identifies firms that strongly agree on at least one of four morale, productivity, quit, or employee-promise items from the battery on reasons for not cutting base pay (648 firms; 243 constrained, 37.5%). The second, “morale-constrained” (layoff sample), identifies layoff firms that strongly agree that wage cuts hurt morale and productivity more than layoffs (1,004 firms; 260 constrained, 25.9%). Section 8.5 validates this measure cross-sectionally: it predicts significantly fewer base-wage cuts (-8.2 percentage points), more bonus cuts ($+8.4$ percentage points), and fewer layoffs (-12.5 percentage points). The third, “Do not know,” identifies layoff firms that cannot quantify a job-saving pay-cut threshold; the substitution trade-off does not exist for them as an operational concept. We compare employment trajectories using two event-study specifications over 2016-2022, both with firm fixed effects and shock-severity-by-year interactions: one in log employment levels and one in employment growth rates, where `lincom` tests compare each post-2020 coefficient to the average pre-trend.

The constraint groups are comparable to other surveyed firms on pre-shock observables.⁵¹ Pre-trend diagnostics from the levels specification differ across groups. For “Do not know” firms, all pre-2020 coefficients are insignificant, supporting parallel trends. For the morale (non-cutter) measure, the 2018 coefficient is -0.049 ($p < 0.01$), indicating a pre-existing

⁵¹Standardized differences in 2018-2019 employment growth, firm size, revenue level, revenue growth, and female workforce share are all below 0.20 in absolute value; the largest difference is the bachelor share (-0.18 SD for morale-constrained non-cutter firms). Industry composition does not differ significantly ($\chi^2(7) = 2.93$, $p = 0.891$; Appendix Tables S.1 and S.2).

employment gap; we interpret post-2020 coefficients with caution. For the morale (layoff) measure, pre-2020 coefficients are modest and mostly insignificant.

Neither morale-based constraint measure produces employment effects that survive pre-trend adjustment. For the non-cutter measure, a pre-existing gap of approximately 5 log points persists throughout the panel with no break at 2020; growth-rate `lincom` tests confirm that post-2020 growth is not significantly slower than the pre-trend. For the layoff measure, which Section 8.5 validates cross-sectionally, all post-2020 level coefficients are small and insignificant, and all growth-rate `lincom` tests are insignificant: zero differential employment trajectory for the one measure with cross-sectional validation. For “Do not know” firms, a marginally significant 2022 coefficient appears in levels (-0.058 , $p < 0.10$), sharpening to a significant break in growth rates (-0.060 , $p < 0.01$). Under the canonical mechanism, however, the employment effect should appear when firms face the acute cost-adjustment decision in 2020; in levels, no constraint measure produces a significant 2020 coefficient; in growth rates, the `lincom` tests show no significant 2020 break beyond the pre-trend for any measure, and for both morale measures, no year produces a significant break (Appendix Tables S.3 and S.4; Figures S.1 and S.2).

In sum, the morale-based constraints that this paper documents as important barriers to pay cuts do not translate into differential employment trajectories. Cross-sectionally, the validated morale (layoff) measure predicts how firms adjust pay (Section 8.5). Dynamically, constrained and unconstrained firms follow indistinguishable employment paths over 2016-2022: all `lincom` tests are insignificant for both morale measures. For “Do not know” firms, pre-trends are clean but the only significant post-shock break appears in 2022, two years after the acute cost-adjustment decision. Under the canonical view, if base-wage rigidity forces firms onto the layoff margin, firms citing stronger barriers should shed more workers and experience worse employment dynamics. Under the view advanced in this paper, this null is expected: tighter base-wage-cut constraints do not mechanically translate into more separations because firms do not treat pay cuts as an operational substitute for layoffs.

Recent work using U.S. administrative data provides compelling evidence of allocative effects of downward nominal wage rigidity: firms whose pre-recession wage distributions exhibit an excess zero spike experience larger employment declines during the Great Recession (Kurmann and McEntarfer, 2024; Ehrlich and Montes, 2024). That measure captures a different object: the excess zero spike is a revealed-preference indicator of how rigid total compensation is at a given firm, strongly predicted by having less non-base pay, so it identifies firms where total labor costs cannot easily decline because there are no non-base channels to absorb the shock. Our measures target the specific reasons firms give for not cutting base wages, reasons that are compatible with total labor costs declining through non-

base pay. The contrast is informative: differential employment losses are associated with the inability to reduce total labor costs, not with the specific endogenous constraints (morale damage, fear of quits, inability to formulate the trade-off) that firms cite as the barrier to base-wage cuts. The two sets of findings are complementary: Kurmann and McEntarfer’s measure identifies firms that cannot reduce total compensation; ours identifies firms that face endogenous barriers to one component of compensation. Together they clarify that it is total-pay rigidity, not base-wage rigidity per se, that carries allocative consequences.

9 Conclusions

Using a large-scale employer survey linked to administrative records in Denmark, we distinguish whether pay cuts can in principle save jobs from whether firms treat them as a practical job-saving tool. The wedge between the two is large and systematic. Pay reductions are feasible and do occur, yet many firms do not treat pay cuts as a close, operational alternative to layoffs.

Three sets of evidence support this conclusion. First, 61% of layoff firms cannot quantify a pay-cut-to-jobs-saved threshold, and even among those that can, realized adjustments fall far short; at most 23% of layoff activity is even conceptually eligible for substitution. Second, pay cuts and layoffs serve different operational functions within firms: pay cuts are broad, layoffs are targeted and selective. Third, linked administrative records fail to support, and in some cases contradict, the substitution prediction on the margins we test: pay cuts and layoffs co-move in distress rather than trade off, stated constraints on pay cuts do not cleanly predict differential employment adjustment, and slack labor markets reduce layoffs but do not increase pay cuts. The stayers’ wages and slack-market tests actively contradict the substitution prediction; the morale-constraint and allocative-effects tests yield nulls where the canonical view predicts strong effects. The contribution is convergence: six independent tests, drawing on different variation and different outcomes, all point against substitution.

The substitution channel breaks down for three distinct reasons. First, the pay-cut-to-jobs-saved mapping is not a decision object for most firms: they cannot formulate the trade-off as a quantitative problem. Second, the constraints that prevent wage adjustment are largely endogenous: morale damage, fear of quits, disruption to internal pay structures. Third, layoffs serve objectives that are not reducible to wage-bill savings: targeting, reorganization, and selection of the workforce. The evidence consistently points to pay cuts and layoffs as co-responses to distress, not substitutes along a single cost margin.

We confirm at scale the seminal findings of Bewley (1999): morale as the dominant barrier to pay cuts, multiple layoff motives, pay cuts would not save jobs. What is new is the question and the test: do firms operationalize the wage-layoff trade-off? A natural

extension is to test whether the non-substitutability result holds in economies with stricter employment protection or less flexible wages, where the wage-layoff calculus may differ.

That the substitution channel does not appear to operate for many firms carries implications for macroeconomics and policy. For macroeconomics, a large class of business-cycle models relies on wage-employment substitution as a micro foundation; we find that most firms do not trade off pay cuts for layoffs; the two margins serve different objectives inside the firm. For policy, our findings suggest that removing formal barriers to wage flexibility would not lead most firms to substitute pay cuts for layoffs; the binding constraints are endogenous to the employment relationship.

The data point toward a richer structure for how macro models represent the wage-employment relationship. The canonical formulation posits one objective (cost reduction) and two instruments that trade off along the wage bill. The data show that effective labor cost is multi-dimensional: pay cuts address the wage-bill margin (the price of existing labor), while layoffs address the composition margin (the match between workforce and production needs). Both serve cost minimization, but along different constraints, and are therefore not substitutes along any single margin. In addition, relationship preservation constrains both instruments asymmetrically: it makes pay cuts broadly costly and layoffs selective. Most separations serve composition objectives that no degree of wage flexibility can address.

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