Why Firms Lay Off Workers instead of Cutting Wages: Evidence from Linked Firm Survey-Administrative Data

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NBER SI, July 17-20 2023

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Wage rigidity and employment fluctuations

- Wage rigidity is a key to employment fluctuations in many macro models
- Some evidence that wages adjust infrequently, even less so downward
- But the allocative role of the seemingly rigid wages remains unsettled

Why firms lay off workers inst of cutting wages

During crises firms lay off a large number of workers. The subsequent search and matching process, hiring and recruiting activities are time-consuming and costly

- Can layoffs be avoided?
- Can pay cuts save layoffs?
- Is downward wage rigidity the reason for layoffs?

This paper

- We design and field a large-scale survey of firms

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- We link our survey data with administrative data to study:

1. How firms adjust labor during crisis - via layoffs or pay cuts
2. Why firms do not cut wages instead of laying off workers

Our key findings

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3. A crisis is an opportune time for firms to lay off low-productivity workers
4. Key considerations on the layoff margin are worker skills and future search and matching costs associated with replacement hiring
5. Morale and fear of quits play a role in pay-cut decisions

Why firms lay off workers inst of cutting wages

1. Firms cut wages (consistent with Elsby and Solon (2019))

2. Other-times, wages appear rigid bcs pay cut is not a substitute for layoff:

   - Some layoffs during a crisis are not caused by the crisis. Rather, a crisis is an opportune time for firms to lay off low-productivity workers
   - In general, layoffs give better control over who leaves

3. Perhaps, some pay cuts might save layoffs. More research is needed to quantify this

Related literature

- Literature on why wages do not fall in recessions:
  - Blinder and Choi (1990), Campbell and Kamlani (1997), Bewley (1999)
  - We study employer perceptions about layoffs and pay cuts in a large representative sample of firms and link firms' responses to admin data
  - Find support for morale considerations, but emphasize that cutting wages would not save layoffs

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  - Our paper: Sticky wages not a key reason behind layoffs
- Perceived fairness of economic actions—"reasons matter":
  - Charness and Levine (2000), Offerman (2002), Kuhn and Osaki (2022)
  - Our paper: Easier to justify layoffs in recessions—"bad times for all"

Linked survey-administrative data

Firms survey design

We designed a firm survey containing 70+ questions (yes/no, multiple choice, open-ended questions, the degree of agreement) in the five categories

1. Impact of the pandemic on firms
2. Labor adjustment strategies in 2020—pay and number of employees
3. Considerations on the layoff margin
4. The extent and reasons behind wage cuts
5. Firm's search and hiring process, recruiting intensity

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3. Considerations on the layoff margin
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5. Firm's search and hiring process, recruiting intensity

- We sent the survey to the population of all Danish firms in June 2021, the response period closed in August 2021
- Response rate is 12%—high for a non-mandatory online survey

Survey data linked with admin data

We link our survey data with rich admin data via firm identifiers

- Firm-level admin data (income statements (FIRM), balance sheets (FIRE))
- Employer-employee matched dataset (BFL, LONN)
- Dataset on the firms' use of the government assistance programs during the pandemic

Survey sample after restrictions: 2,488 firms

Data quality checks

- At the beginning of the survey, we asked how knowledgeable is the person who fills out the survey with the human resources policies of the firm. We dropped the survey responses that were filled out by people not knowledgeable

- We check for internal validity of survey responses, using admin data

Data quality check

Danish data: institutional and econ context

Institutional:

- Wages and hours are (mostly, 80%) set at the firm- and not industry-level
- Relatively low employment protection (Kreiner and Svarer (2022))

Economic context in 2021:

- Not-so generous “furlough” programs during the pandemic
- At the time of the survey, the pandemic was declared under control

Info on the Danish job retention scheme vs. other OECD countries

Summary statistics

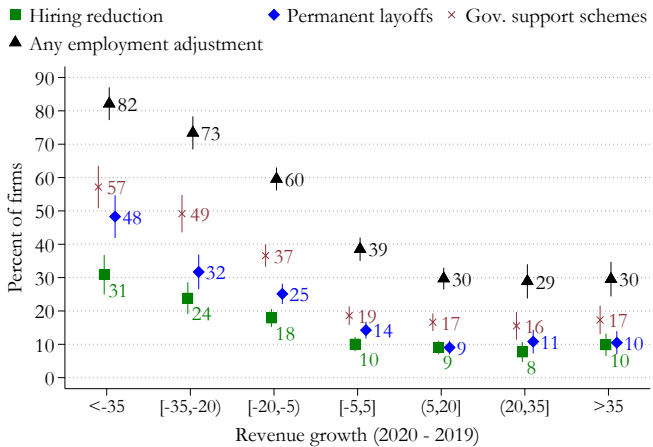
	Population	Sample	Sample (Weight)
N	21835	2488	2488
Size	33.15	39.73	33.50
Productivity	88.11	94.31	93.12
Labor costs	66.61	70.58	69.59
Manufacturing	14.50	17.48	14.93
Wage floors	16.20	17.44	17.69
Female	28.64	28.80	28.32
Unionized	55.76	59.88	59.05

Sample sizes across samples

How firms adjusted labor in the 2020 crisis

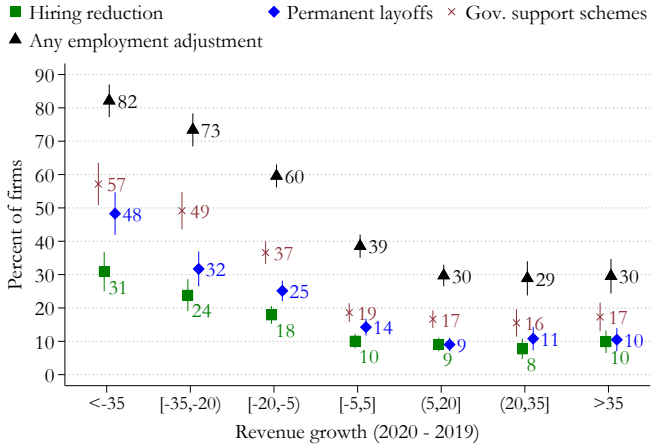
Layoffs are prevalent. More so if a larger revenue reduction. But growing firms also report layoffs

Reduction in the number of workers in 2020, by firm growth More



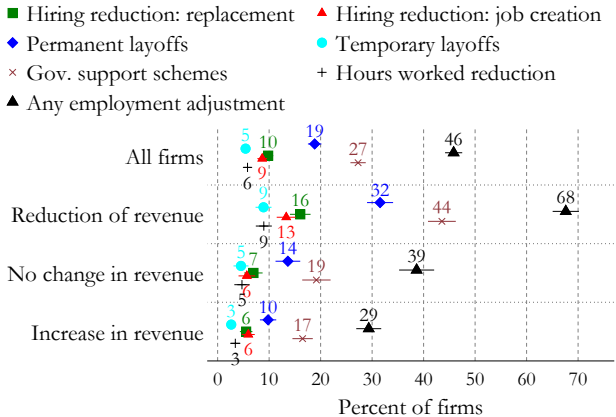
Firms reported layoffs despite ample use of government-sponsored furlough schemes

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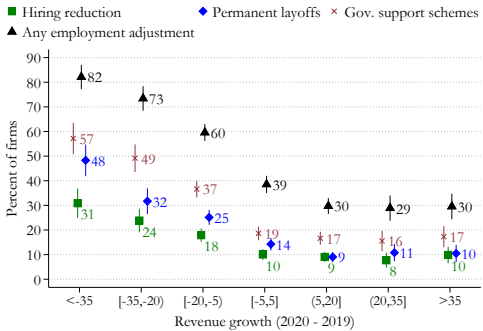


Firms Layoffs despite other adjustment methods

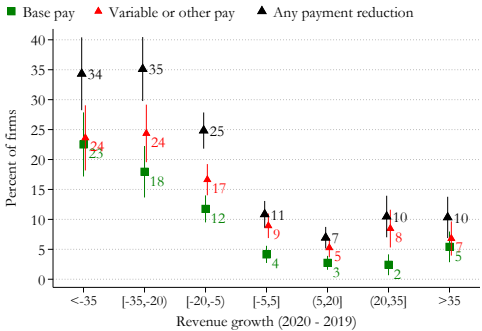
Reduction in the number of workers or hours in 2020, by firm growth



Firms reduced more employment than worker pay



(a) Workers and hours, 2020



(b) Worker pay, 2020

How firms adjusted labor in the 2020 crisis

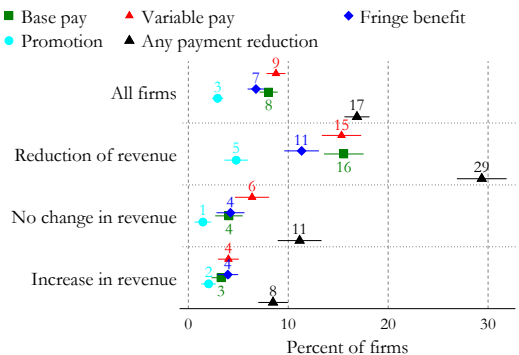
- Layoffs are prevalent. More so in firms with larger revenue reductions
- Firms reported layoffs despite ample use of government furlough schemes
- A higher share of firms reduced the number of workers than worker pay

Are wages rigid downward? Would pay cuts save layoffs?

Pay cuts are not rare

Pay cuts are not rare, especially among firms that experienced reduction in revenue

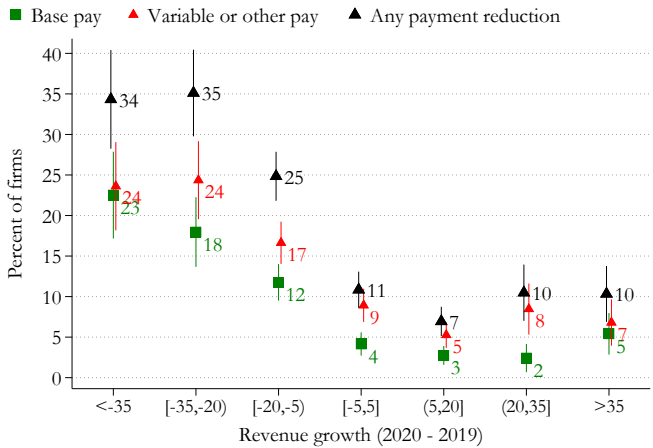
Reduction in worker pay in 2020, by firm growth



- 29% of firms with a reduction in revenue implemented some pay cut

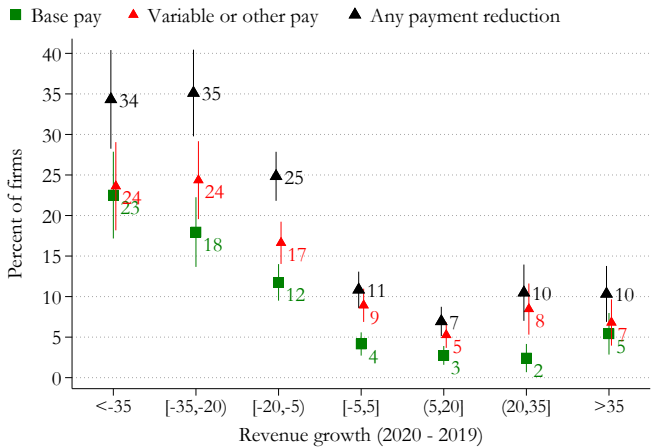
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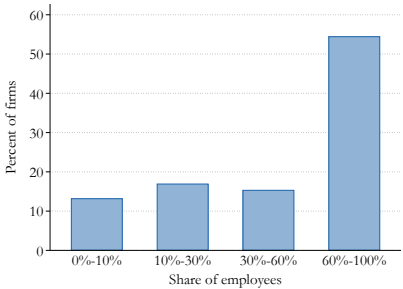
Bonus as well as base pay cuts take place, especially if revenue reduction

Reduction in worker pay in 2020, by firm growth

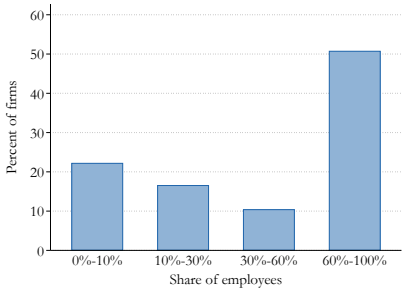


If pay cuts happen, they are rather prevalent

Distribution of firms by the % of workers affected by pay cut, cond. on pay cut



(a) Base pay



(b) Variable pay

Pay cuts by firms characteristics, performance

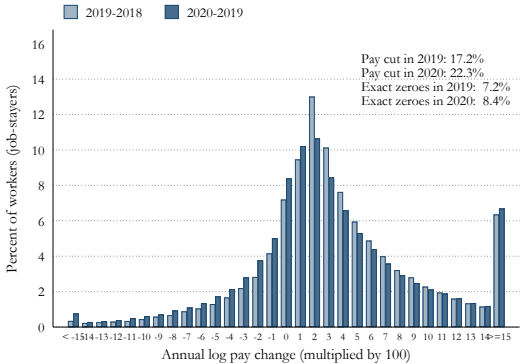
We also study how firms' pay cuts vary with the firm size, value added per worker, labor cost per worker, capital per worker, liquid assets per worker, percent of unionized workers in firm, or the average tenure of the workers

- Higher value-added-per-worker firms are less likely to cut base pay
- Higher labor-costs-per-worker firms are more likely to cut base pay

OLS results

Pay cuts are not rare, administrative data

Distribution of worker total nominal hourly pay growth 2018-19 and 2019-20

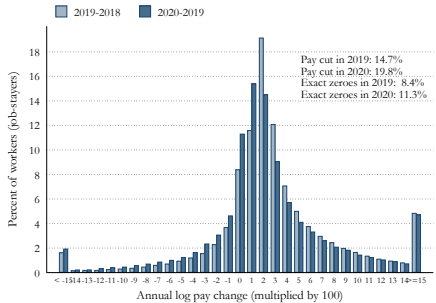


Note: The annual log change in total nominal hourly pay in the admin. matched employer - employee data (BFL), salaried workers continuously employed for 24 months at the same firm, the same 6-digit occupation in the firms in our survey

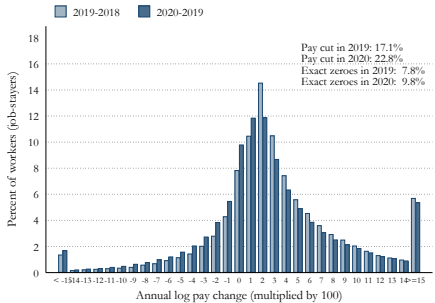
- 22.3% workers experienced pay cuts in 2020, 17.2% in 2019 Monthly admin data

Pay cuts are not rare, mandatory firm survey

Distribution of worker base and hourly pay growth



(a) Base hourly pay



(b) Total hourly pay

Note: The log change in nominal hourly pay in the mandatory firm survey (LONN), the sample of workers continuously employed for 24 months at the same firm, the same 6-digit occupation in the firms in our survey

- 19.8% of workers experienced base pay cuts over 2020-19, 14.7% in 2019-18

Survey vs. admin data pay cuts | Alt. definition

Pay cuts are not rare

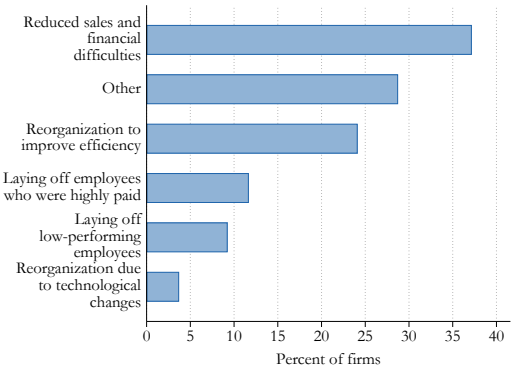
- Especially among firms that experience revenue reduction
- Bonus as well as base pay cuts take place, especially if revenue reduced
- If pay cuts happen, they are rather prevalent across workers in the firm
- That pay cuts are not rare is also supported in administrative data

If pay cuts do occur during a crisis, why don't pay cuts save layoffs?

Crisis as an opportune time for layoff

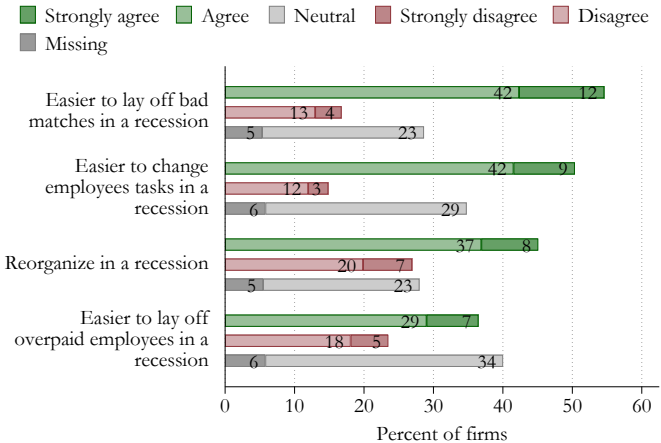
While reduced sales is a modal reason behind layoffs, only 1/3 of respondents chose it

Reported reasons for layoffs in 2020



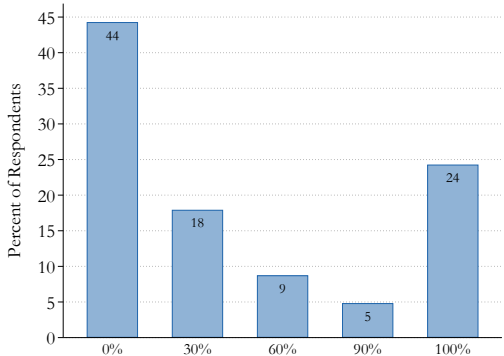
- Other reasons for layoffs—reorganization, laying off overpaid or low-productivity workers

Majority agrees that crisis is an opportune time to lay off less-productive workers or reorganize



The layoffs not necessarily caused by the crisis

How many of the layoffs would have happened in 2020 or the next 2 years if not for the pandemic?



- 56% would have laid off some of the workers in the following two years if not for the crisis
- 29% would have laid off more than 90%

Key consideration at the layoff margin

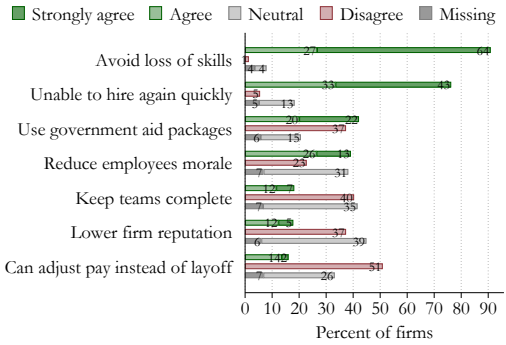
- To understand whether a possibility to reduce pay plays a role in layoff decision, we asked about the key reasons of why firms **did not lay off** workers despite a reduction in sales or other cost pressures. Even if a firm laid off some workers, we asked why not more

- Firms report that key considerations at the layoff margin are not about adjusting pay

- Key considerations are (1) avoiding skill loss—91% agree, and (2) search and matching cost to rehire later—76% agree

Key consideration at the layoff margin is avoiding a skill loss versus ability to lower pay

What were the main reasons for retaining employees despite cost pressures?



Responses to "What were the main reasons for retaining employees despite a reduction in sales, other cost pressures? Even if you have laid off some employees, consider why you have not laid off more," firms w revenue reduction in 2020

Crisis as an opportune time for layoffs

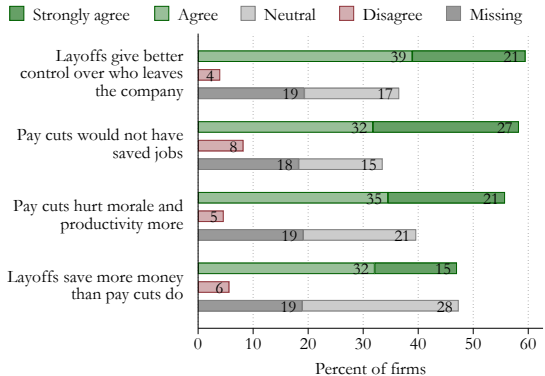
- While reduced sales is a modal reason behind layoffs, only 1/3 of respondents chose it
- Majority agrees that crisis is an opportune time to lay off less-productive workers or reorganize
- 56% of firms respond that some or all of layoffs were not caused by the crisis
- Key consideration at the layoff margin is skill loss vs ability to lower pay

Next: More evidence on whether pay cuts can save layoffs

Can pay cuts save layoffs?

Layoffs give better control of who leaves
pay cuts would not have saved jobs

Reasons for not lowering pay instead of laying off workers



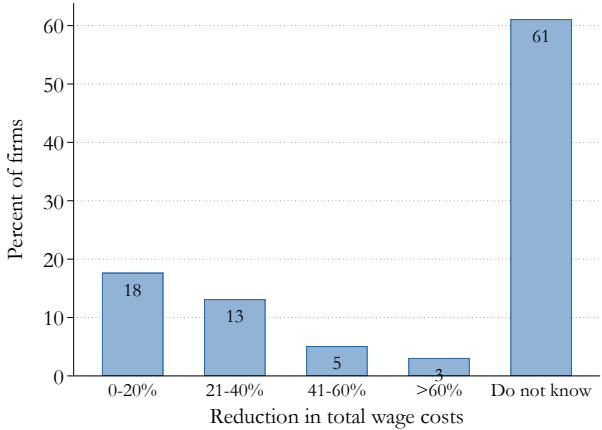
Note: The question is asked of firms that laid off some workers

What reduction in pay cost could have prevented layoffs?

- To understand whether a pay reduction could have saved layoffs, we asked firms what reduction in the total pay cost could have prevented layoffs?
- 61% of firms responded “Do not know”. How to interpret this?
  - It could have meant that the answer exists but the respondent is not privy to the decision-making process. However, we screened the respondents for the role in the firm. So this interpretation does not hold
  - It could mean that the firm does not consider a pay cut as a way to save layoffs
  - It could mean that the firm does not know

A PAY CUT TO SAVE LAYOFFS IS LARGE OR UNKNOWN

What reduction in the total pay cost could have prevented layoffs?



Note: The question is asked of firms that laid off some workers

Can pay cuts save layoffs?

- When asked why not lower pay instead of laying off workers, 60% of firms agrees that layoffs give better control who leaves the firm and pay cuts would not save layoffs. 56% responded that pay cuts hurt productivity and morale more
- A size of the pay cut needed to save layoffs is unknown or large

Conclusions

Conclusions

Using our original large-scale survey of firms linked to the admin data, we find the following regarding how firms adjust labor in response to adverse shocks:

- Layoffs are much more prevalent than pay cuts
- But pay cuts are not rare
- Most firms do not consider pay cuts as a substitute for layoffs during crisis
  - A crisis is an opportune time for firms to lay off low-productivity workers
  - Firms resist cutting pay for other workers to avoid quits

Takeaways on wage stickiness and layoffs

- Is wage stickiness *the* reason for layoffs?
  - A crisis is an opportune time for firms to lay off low-productivity workers
    - Restructuring during recessions, Koenders and Rogerson (2005)
    - "Bad times for all" in the reasons-matter behavioral literature
- Wage rigidity and employment fluctuations
  - Wage rigidity not the dominant factor in the layoff decision
  - "Wage cuts would not prevent layoffs" (as in Bewley (1999))

Extra Slides

Survey data collection and Sample Selection

We sent the survey invitation to all Danish private-sector firms

- Sent via emails in June 2021 by a private consulting firm
- Several follow-ups. The response period closed in August 2021
- Hiring and wage policy questions are analyzed in Bertheau, Larsen and Zhao (2023) and Bertheau and Hoeck (2023), respectively

The response rate is 12% (2787/21835)—high for a non-mandatory survey

We delete observations with:

- Little HR knowledge of the company, missing answers, and incoherent answers

2787 obs. before sample restriction. 2488 after sample restriction Go back

Data Sources (1)

We linked our survey data with admin data via a unique firm (CVR) and individual (PNR) identifier. We use the following datasets and variables:

General firm statistics (FIRM). Value-added: revenue - intermediate costs, firm age, capital stock, labor costs. Annual frequency

Balance sheet (FIRE) datasets: Liquid assets. Annual frequency

Matched employer-employee datasets (BFL, IDAN): occupation, *monthly* hours worked and total earnings (base pay and bonuses), job tenure

Mandatory pay survey (LONN): pay components (base, overtime, bonuses etc), hours components (hours and overtime) at the annual frequency at the worker-occupation-establishment level. Available for employees in firms with more than 10 employees Go back

Data Sources (2)

Additional worker-level datasets (UDDA, IDAP, IND): level of education, union status of a worker, age

Number of vacancies from job boards and unemployed workers from public employment services at the occupation level (data source: STAR). Construct firm-specific tightness following Hoeck (2023). $\theta_j = \sum_{o=1}^{O} w_{oj}\theta_o$

Recruitment survey (Rekrutteringssurvey): ask firms hiring outcomes 4 months after a vacancy is posted on a job board

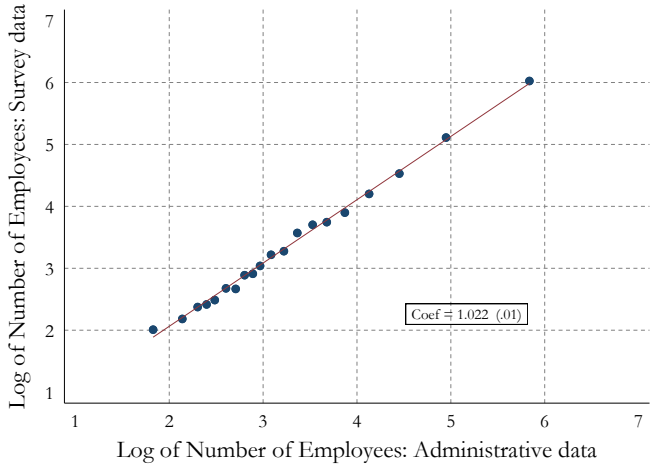
Minimum wages at the occupation-industry level (data source: employer association). Construct whether a wage floor regulates the majority of jobs in a firm Go back

Key advantages of our linked survey-admin data

- In the survey we ask “what” and “why”
  - Answers to “why”—the reasons behind firms actions—provide tests for theories
- Linking with admin data allows for detailed additional info
- Large sample size as compared to the existing surveys

Comparing our survey with admin. data: firm size

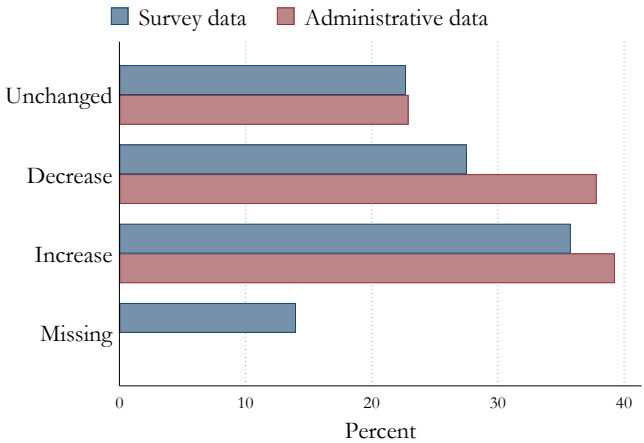
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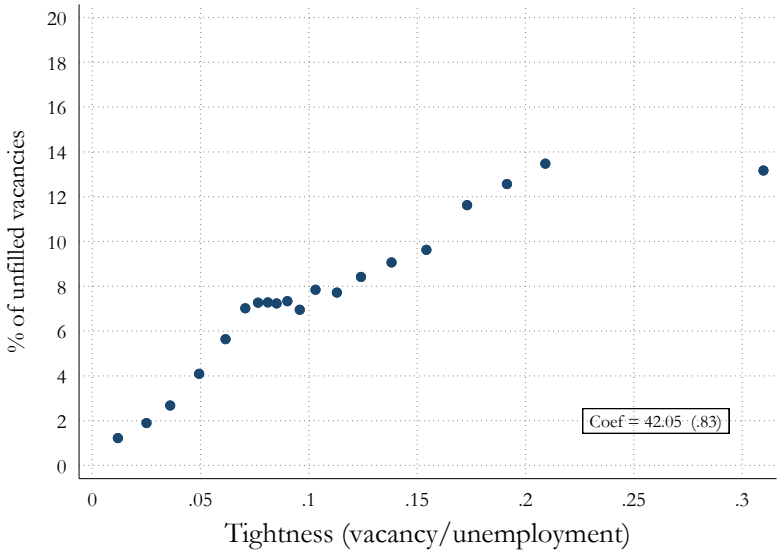
Comparing our survey with admin. data: 2019-2020

Revenue change

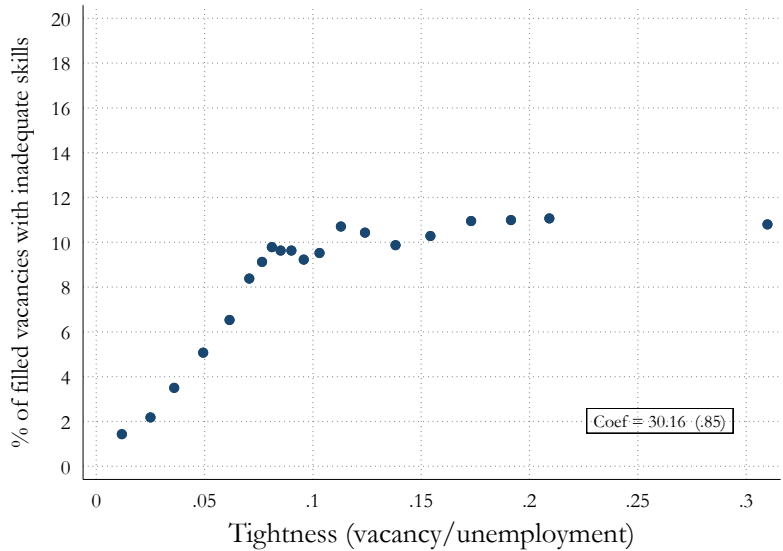
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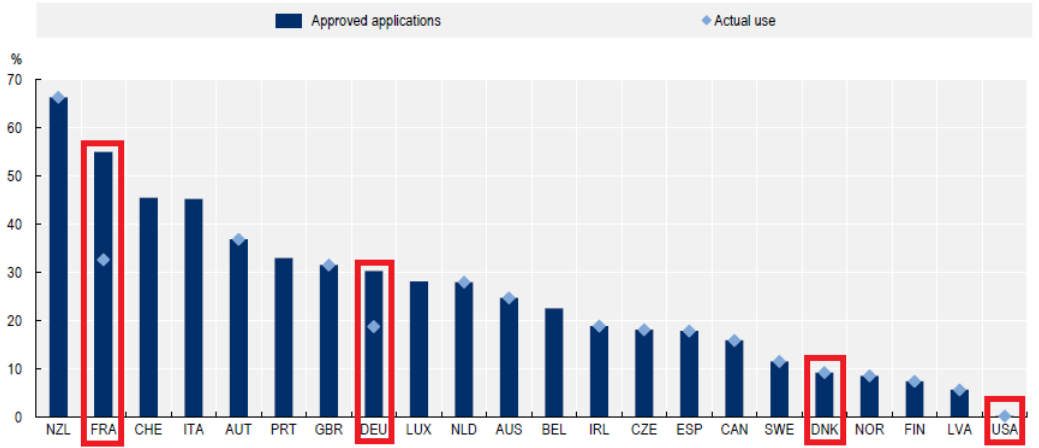
Tightness (θ) and % of Unfilled Vacancies



% of Filled Vacancies with "Inadequate" Workers

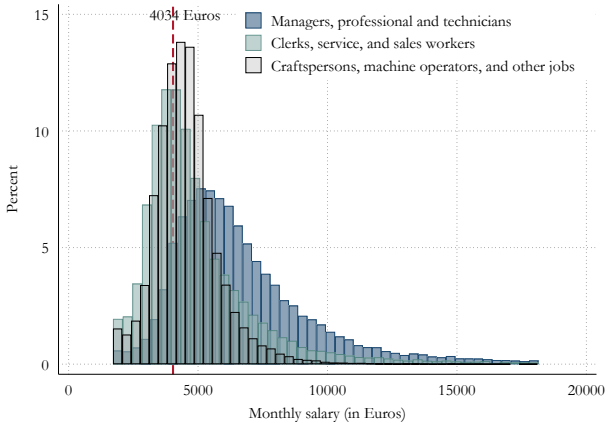


Low Take-up of Job Retention scheme..



Take-up rates of job retention schemes in May 2020, calculated as a percentage of dependent employees in 2019 Q4. Source: OECD Go back

...As it was not so generous in Denmark



Note: Salary of full-time employees in our data. 4034 EUR: monthly cap at which the furlough scheme could cover 75% of a worker's salary Go back

Respondents and firm characteristics

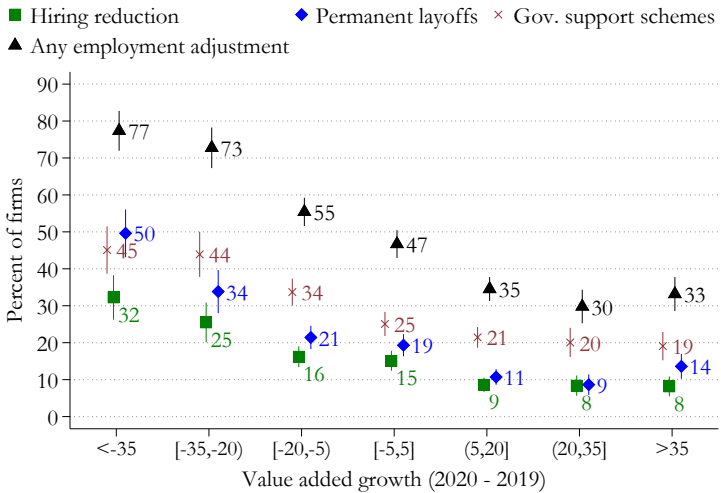
	Mean	Count
Knowledge of HR policies (%)	100.00	2488
Manager respondents (%)	83.64	2070
% of firm...		
Revenue reduction in 2020	27.17	685
Laidoff	40.96	1,053
Did not cut base pay	91.92	2,276
Did not cut base pay & rev. red.	22.67	567

Note: This table reports the weighted average and the count of selected variables from our survey.

Go back

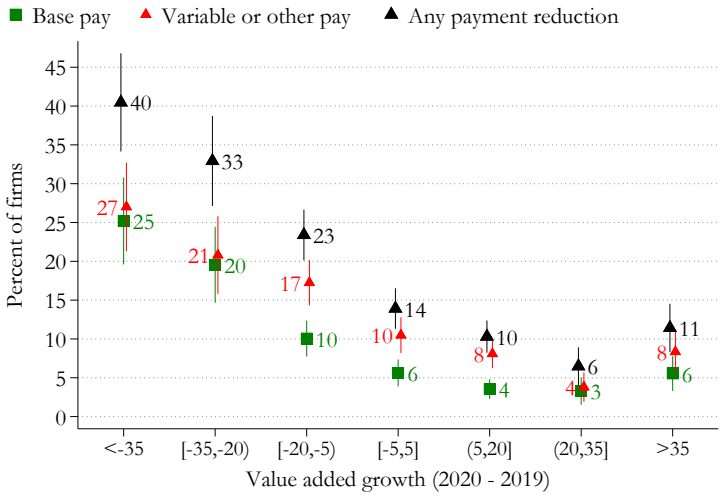
Reduction in the Number of workers

Fig. by revenue



Reduction in worker pay

Fig. by revenue



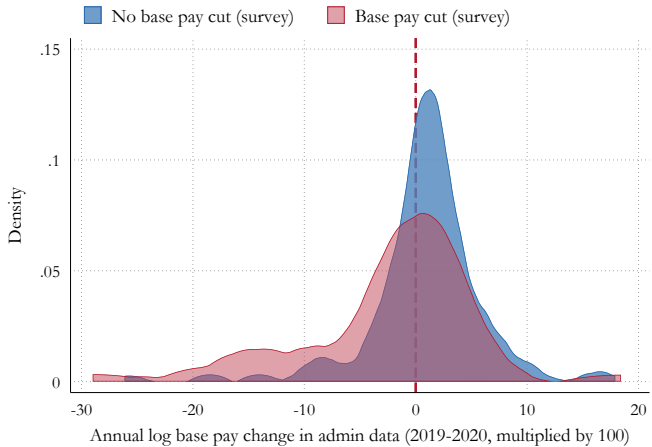
Pay cut by Firm and Labor market Characteristics

Outcome is a dummy for:	Base pay red.	Bonus pay red.	Hiring red.	Layoffs
Productivity	-3.88***	-1.25	-2.21*	-3.96***
Labor cost /worker	2.88**	0.57	1.00	1.39
Value-added growth	-4.81***	-4.26***	-5.94***	-8.34***
Unionized workers	-0.44	-0.19	0.60	2.34***
Worker representative	2.29*	0.88	2.30	0.93
Tightness	-1.18**	-0.18	-0.64	-0.33
N	2446	2446	2446	2446

Go back

Base pay cut in Our Survey. vs. LONN

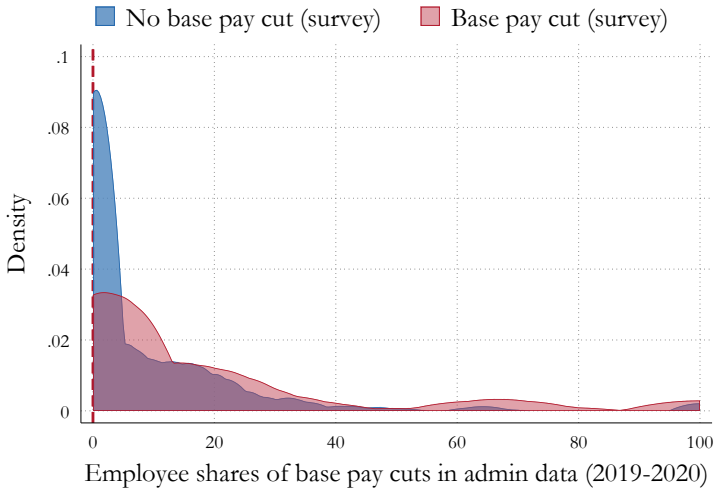
Go back



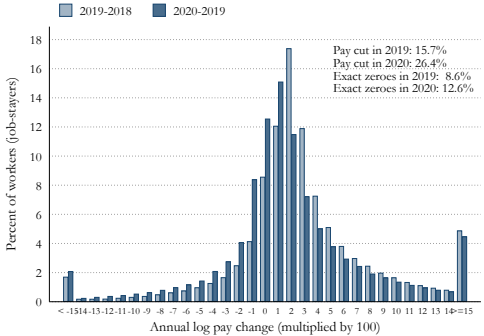
Note: DHS growth rate of base hourly pay (LONN)

Base pay cut in Our Survey. vs. LONN

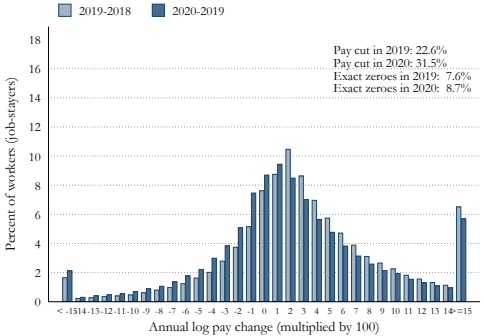
Go back



Nominal pay growth (lonn)



(a) Base hourly pay

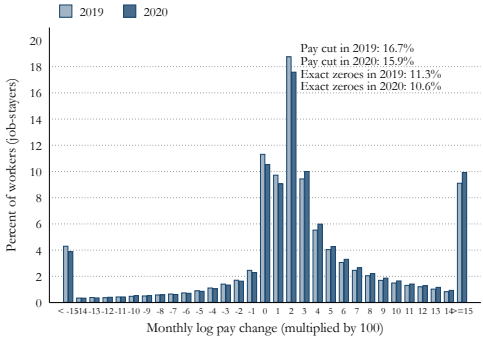


(b) Total hourly pay

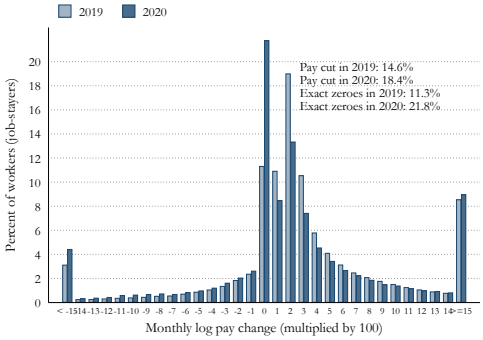
Note: Alternative definition of hours worked to define the base and total hourly pay changes

Go back

Pay cuts are not rare, admin data (monthly)



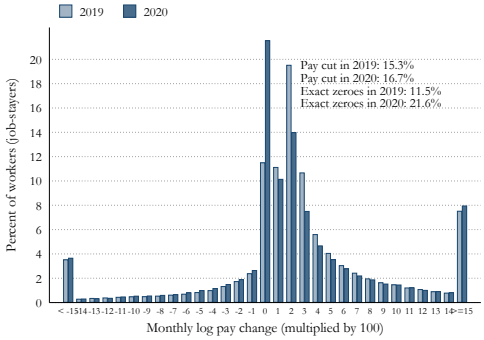
(a) Total hourly pay: January



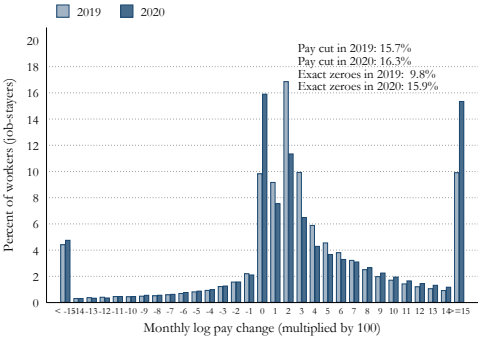
(b) Total hourly pay: July

Note: The BFL dataset does not distinguish between different pay and hours components Go back

Nominal total pay growth (BFL)



(a) Total hourly pay: October

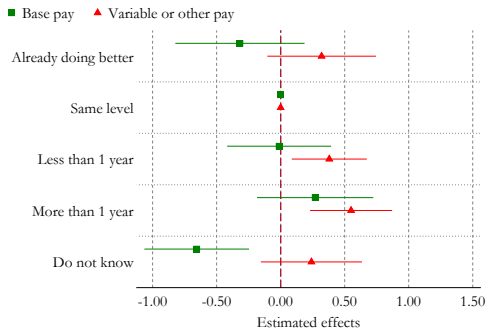


(b) Total hourly pay: December

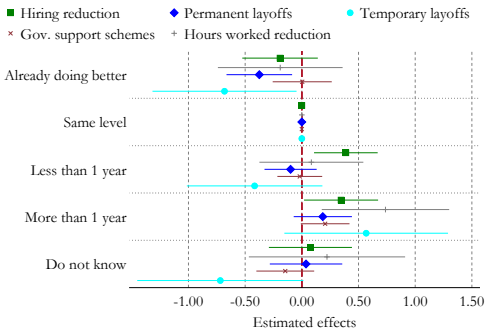
Note: The BFL dataset does not distinguish between different pay and hours components

Go back

Expectations about the shock and labor adjustment



(a) Worker pay



(b) Number of workers

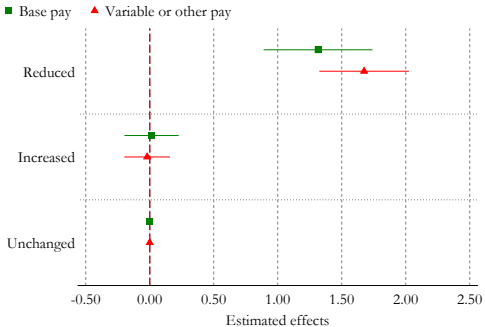
Expectations about the length of the shock

Base wage reductions: more likely by firms that expect a reduction in revenue to last more than a year than by those that expect less persistent shock

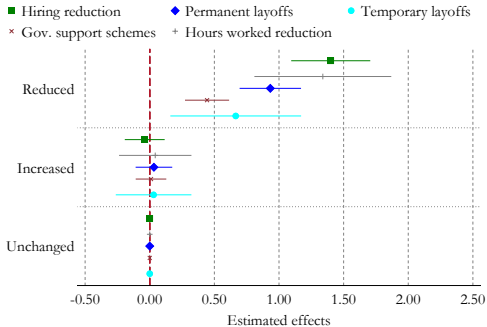
Permanent layoffs: more likely among firms that expect the shock to last more than a year than those that expect a less persistent shock

The firms that responded “Do not know” re persistence of the shock, were less likely to cut the base wage than those that had some expectations

Investment plans and labor adjustment

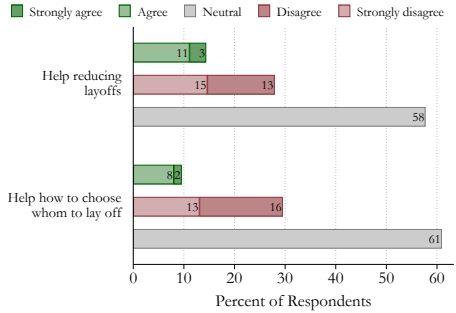


(a) Worker pay



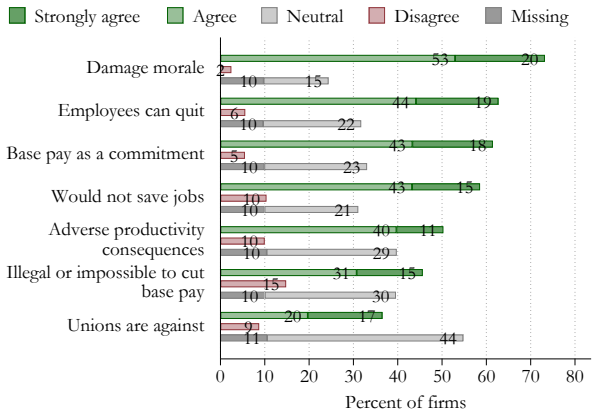
(b) Number of workers

Worker Representative and Layoff Decisions



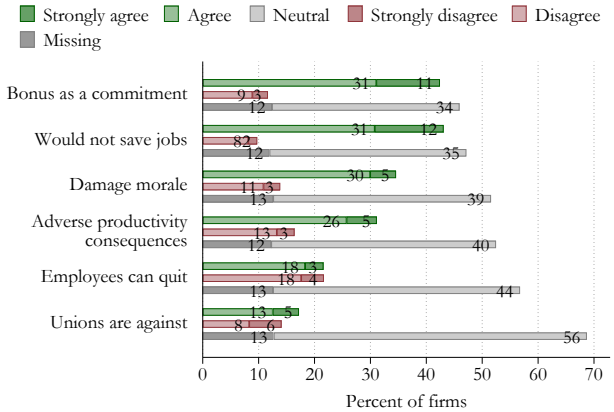
Note: The figure reports responses to the question: What is your position on the following statements? “Union representatives help reduce the number of layoffs by finding alternative solutions to reduce wage costs (reorganization, wage reduction, etc.)” (labeled ”help reducing layoffs”). “Union representatives help implement layoffs by identifying low/high-performing employees or setting criteria for who can be laid off” (labeled ”Help how to choose whom to lay off”).

Morale and fear of quits impact pay-cut decisions



Firms with more routine jobs are more likely to report adverse productivity consequences

Reasons for not lowering bonus pay



Reasons are related to commitment as would not save layoffs

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