

To Cut or Not To Cut?

Theory and Evidence on the Frequency of Nominal Pay Cuts

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 - at the core of macroeconomic theories of wages and unemployment fluctuations (e.g. [Dupraz et al. \(2019\)](#));
 - large body of empirical literature documenting the existence of nominal wage rigidity (e.g. [Elsby and Solon \(2019\)](#));
 - But... why? Most of what we know is based on surveys to managers and labour leaders (e.g. [Bewley \(1999\)](#)).

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This Paper

- ▶ Extends existing model of morale, reciprocity and wage rigidity: how discretion and involvement affect firms' wage-setting decisions.
- ▶ Tests predictions and provides new evidence on the frequency of nominal pay cuts using a unique dataset (ASHE-WERS).

Some Relevant Literature

Why not cut pay?

- ▶ Morale, fairness and negative reciprocity (Bewley, 1999; Fehr et al., 2009):
 - workers' morale → productivity and cooperation in the workplace;
 - nominal pay cuts → unfair → hurt morale, trigger negative reciprocity;
 - firms refrain from cutting nominal wages during recessions;
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Are pay cuts always perceived as unfair?

- ▶ Information provision and employee involvement:
 - economists: information sharing and explanations can make pay cuts more acceptable (Bewley, 1999; Campbell and Kamlani, 1997);
 - organizational psychologists: justification and open procedural justice can reduce feelings of hostility and enhance morale and cooperation (Greenberg, 1990; Timming, 2012; Wang and Seifert, 2017)
 - information sharing/participation reduce uncertainty about organizational affairs, increase perceptions of fair treatment (Bordia et al., 2004).

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Employee *involvement* practices reduce the detrimental effects of nominal wage cuts on workers' morale.

Outline

Theoretical Model

Environment

Discretionary Effort and Wage Setting

Predictions

Empirical Analysis

Data

Empirical Approach

Results

Conclusion

Environment & Assumptions

- ▶ Representative one-worker-one-firm matches
 - two-stage game: I) firms set the wage \Rightarrow II) workers choose effort;
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► Firms

- output $Y(Z, E) = ZE$, where Z is a nominal shock and E is worker effort

$$E = \alpha \bar{e} + [1 - \alpha] \tilde{e}$$

- \bar{e} : contractually agreed effort level (given);
- \tilde{e} : discretionary effort level (chosen by the worker);
- $\alpha \in (0, 1)$: degree of *completeness* of the employment contract.

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- ▶ Workers
 - morale affects productivity (marginal cost/benefit of effort);

$$M(e, W, W_{-1}) = e \left\langle \mathbb{1}^+ [\ln W - \ln W_{-1}] + \mathbb{1}^- \{ [1 - \mathcal{I}] \lambda + \mathcal{I} \} [\ln W - \ln W_{-1}] \right\rangle$$

- reference dependent: morale depends on W relative to W_{-1} ;
 - loss averse $\lambda > 1$: nominal wage cuts are particularly detrimental to morale;
 - extent of *involvement* $\mathcal{I} \in (0, 1)$: reduces the negative effect of wage cuts;
- \Rightarrow workers choose effort e that maximises their utility.

Key Theoretical Results

- ▶ Discretionary effort:
 - effort responds to wage changes;
 - asymmetric response: workers respond more strongly to nominal wage cuts than to equivalent-sized nominal wage increases;
 - loss aversion generates/exacerbates this asymmetry;

⇒ extent of involvement attenuates/reduces this asymmetry.

- ▶ Wage setting:
 - anticipating the behaviour of workers, firms refrain from cutting nominal wages following negative shocks;
 - range of rigidity: the benefit of reducing the wage will be offset by the disproportionate cost of workers' negative effort response;

⇒ extent of involvement reduces this range: firms find it less costly to cut wages;

⇒ the more the contract is complete, the less important these considerations are.

Predictions

Discretion:

The more the contract is incomplete, the larger the impact of workers' discretionary effort on output, the lower the probability of experiencing nominal pay cuts.

$$\text{discretion} \uparrow \rightarrow \mathbb{P}\{\text{nominal pay cut} | W_{-1}\} \downarrow$$

Involvement:

The more workers are involved in decision-making, the greater their morale when receiving pay cuts, the higher the probability of experiencing nominal pay cuts.

$$\text{involvement} \uparrow \rightarrow \mathbb{P}\{\text{nominal pay cut} | W_{-1}\} \uparrow$$

Dataset(s)

We need data on:

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We merge 2 datasets from Great Britain.

▶ **Annual Survey of Hours and Earnings (ASHE):**

- longitudinal panel (yearly), 1% random sample of workers;
- data from April payrolls (employers): higher accuracy;
- ideal for calculating hourly wage changes.

▶ **Workplace Employment Relations Study (WERS), 2004:**

- national survey on employment relations at the workplace;
- info from: managers, and up to 25 employees per workplace
- info on: nature of contract; fair pay; employee involvement; etc.

Merging through firm ids → 5.922 employer-employee matches.

Table

Key Variables

► the ‘Basic Wage’ (Schaefer and Singleton, 2021) (log-nominal change):

- nominal basic earnings per hour: $\frac{\text{basic weekly earnings}}{\text{basic weekly hours worked}}$;
- basic: employees earnings before extra payments are received.

► Discretion (binary):

“[...] to what extent would you say that employees [in the largest occupational group] here have discretion over how they do their work ?”

A lot / Some / A little / None
└──────────┘ / └──────────┘
Discretion / No Discretion

► Involvement (binary):

“We do not introduce any changes here without first discussing the implications with employees”

Strongly agree / Agree / Neither / Disagree / Strongly Disagree
└──────────┘ / └──────────┘
Involvement / No Involvement

Sample Selection

- Sample selection:
- job stayers aged 16–64: working in the same job as in past April;
 - tracked forward and backward for 2 years from 2004 WERS;
 - drop if: apprenticeship-trainee jobs / multiple jobs / worked < 1 or > 100 weekly hours / paid $< 80\%$ of minimum wage / missing-imputed values for pay variables.

	ASHE 2004	ASHE-WERS 2002-2006
Basic wage cuts	0.181	0.146
Basic wage freezes	0.096	0.055
Male	0.513	0.509
Age (years)	42.08	42.38
Hourly basic wage (GBP, mean)	10.93	12.82
Full-time	0.757	0.801
Private sector	0.633	0.448
Union agreement	0.337	0.491
Firm size	17,736	19,942
Firm growth	0.022	0.004
Observations	103,688	14,819

Empirical Approach

- ▶ Kernel density estimates [link to figure](#):
 - groups of job stayers [link to table](#) ;
 1. no discretion;
 2. discretion, but no involvement;
 3. discretion & involvement.
 - frequency of changes in the nominal log basic wage across these groups.

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 - frequency of changes in the nominal log basic wage across these groups.
- ▶ Probit models:
 - conditional likelihood of basic wage cut (less than -0.5 log points).

$$y_{it}^* = \mathbf{X}_{it}^T \boldsymbol{\beta} + \varepsilon_{it} \quad \text{cut}_{it} = \begin{cases} 1 & \text{if } y_{it}^* > 0, \\ 0 & \text{if } y_{it}^* \leq 0 \end{cases}$$

- vector \mathbf{X} includes:
 - ⇒ dummies[t]: **discretion / involvement / interaction term**;
 - ⇒ dummies[t-1]: gender / private sector / national, subnational, industry agreement / full-time;
 - ⇒ others[t-1]: firm size (log), (log change) / age, age² / basic wage (log).

Probit Estimates: Nominal Pay Cuts margins

	Baseline (1)	(1)+Controls (2)	3d-Occ match (3)
Discretion	-0.266*** (0.095)	-0.374*** (0.085)	-0.455*** (0.109)
Involvement	-0.111 (0.115)	-0.179** (0.073)	-0.191** (0.091)
Discretion × Involvement	0.129 (0.135)	0.216** (0.098)	0.246** (0.115)
Male		-0.012 (0.044)	-0.041 (0.052)
Age		-0.007 (0.009)	-0.005 (0.011)
Age squared		0.000 (0.000)	0.000 (0.000)
Log(basic wage)		0.440*** (0.051)	0.510*** (0.061)
Full-time		-0.399*** (0.063)	-0.394*** (0.069)
Private sector		-0.019 (0.088)	-0.046 (0.102)
Union agreement		0.084 (0.092)	0.090 (0.115)
Log(employment)		0.048** (0.022)	0.058** (0.024)
Firm growth		0.066 (0.097)	0.096 (0.092)
Constant	-0.891*** (0.075)	-1.948*** (0.247)	-2.093*** (0.321)
Observations	14,819	14,819	11,751

[Comments]

(1) Baseline:

- when employees have some discretion over their work, but no involvement, nominal pay cuts are *less* likely (significant);

(2) Baseline + Controls:

- when employees have some discretion over their work, but no involvement, nominal pay cuts are *less* likely (significant);
- when employees are involved in decision-making, but have no discretion, nominal pay cuts are *less* likely (significant);
- conditional on having some discretion, when employees are involved in decision-making, nominal pay cuts are *more* likely (significant).

(3) Baseline + Controls – employees not working in the representative occupation:

- estimates become greater;
- significance levels remain the same.

View estimates for likelihood of basic nominal wage freezes

[link to table](#)

Limitations

What if there is some unobserved variable that is correlated with both involvement and the likelihood of nominal pay cuts?

► First, note that:

- involvement is positively and significantly correlated with the likelihood of nominal pay cuts only when interacted with discretion...
- ...otherwise it is negatively and significantly correlated with the likelihood of nominal pay cuts.

► Potential instrument we tried:

- historical union density at the local level (not significant).
- any suggestion?

Conclusions

- ▶ Consensus suggests nominal pay cuts are costly → informing theories of wage rigidity → is this always the case?

- ▶ Extend existing model by explicitly considering discretionary effort and employee involvement:
 - it is the incomplete nature of the employment contract that generates wage rigidity;
 - employee involvement practices can nevertheless attenuate the effect of nominal pay cuts on morale and effort.

- ▶ Provide new evidence in support of these predictions:
 - nominal pay cuts are less frequent when workers have more discretion;
 - nevertheless, in firms adopting employee involvement practices nominal pay cuts are more frequent.

- ▶ Help to inform:
 - ⇒ theories of wage rigidity;
 - ⇒ interpretation of evidence;
 - ⇒ compensation managers about pay policy.

Thank you!

ASHE and WERS match

	Number of matched employees	Number of firms
2002-03	3,322	447
2003-04	4,234	511
2004-05	4,060	500
2005-06	3,203	415
Total	14,819	1,873
Unique	5,021	576

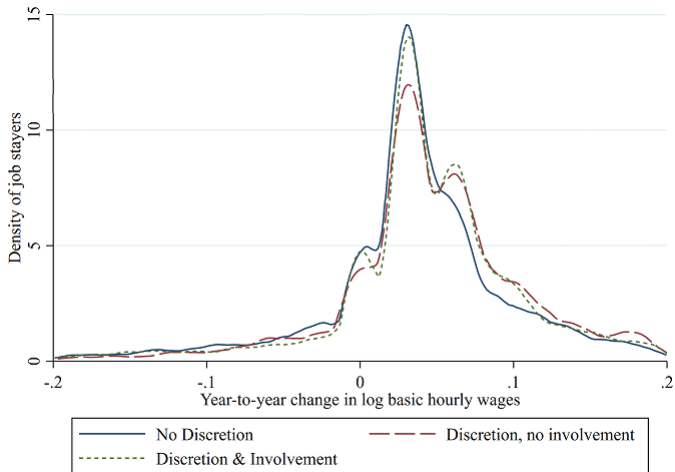
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Descriptive statistics for job stayers, WERS, 2002–2006

	No discretion	Discretion, no EI	Discretion, EI
Basic wage cuts	0.172	0.130	0.134
Basic wage freezes	0.056	0.051	0.054
Male	0.611	0.498	0.448
Age (years)	41.37	42.49	43.00
Hourly basic wage (GBP, mean)	12.12	13.97	12.94
Full-time	0.825	0.781	0.792
Private sector	0.676	0.447	0.307
Union agreement	0.348	0.486	0.584
Firm size	27,931	12,597	16,974
Firm growth	-0.005	0.005	0.009
Observations	4,905	2,231	7,683

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Kernel Density Estimates



Margins: Nominal Pay Cuts

MARGINS		Baseline	(I) + Controls	(II) + 3-digit occ matched
		(I)	(II)	(III)
Discretion	0	0.171	0.168	0.175
	1	0.132	0.122	0.115
Involvement	0	0.149	0.142	0.137
	1	0.143	0.134	0.131
Discretion x Involvement	0 0	0.194	0.206	0.215
	0 1	0.165	0.159	0.164
	1 0	0.129	0.116	0.107
	1 1	0.133	0.123	0.117

Predicted probabilities, at the mean of all other (control) variables.

E.g. model (II):

► Compared to **no discretion** (no involvement), probability of a wage cut with **discretion** (no involvement) is $0.116 - 0.206 = -0.09$, i.e. 9 percentage points lower.

► Compared to **discretion and no involvement**, probability of a wage cut with **discretion and involvement** is $0.123 - 0.116 = 0.07$, i.e. 7 percentage points higher.

Probit Estimates: Wage Freezes

	Baseline (1)	(1)+Controls (2)	3d-Occ match (3)
Discretion	-0.113 (0.121)	-0.136 (0.112)	-0.189 (0.117)
Involvement	-0.133 (0.136)	-0.182 (0.128)	-0.251** (0.128)
Discretion × Involvement	-0.007 (0.261)	0.211 (0.148)	0.270* (0.151)
Male		0.037 (0.041)	0.045 (0.046)
Age		0.031** (0.014)	0.024 (0.015)
Age squared		-0.000 (0.000)	-0.000 (0.000)
Log(basic wage)		0.094 (0.058)	0.106 (0.065)
Full-time		0.039 (0.072)	-0.082 (0.078)
Private sector		0.198*** (0.074)	0.265*** (0.085)
Coll. agreement		0.074 (0.080)	0.062 (0.085)
Log(employment)		-0.046* (0.025)	-0.052** (0.026)
Firm growth		-0.046 (0.150)	-0.200 (0.211)
Constant	-1.767*** (0.160)	-2.228*** (0.413)	-2.003*** (0.453)
Observations	15,497	15,497	12,297

Margins: Wage Freezes

MARGINS		Baseline	(I) + Controls	(II) + 3-digit occ matched
		(I)	(II)	(III)
Discretion	0	0.0559868	0.0510852	0.050917
	1	0.0534097	0.0528458	0.0511823
Involvement	0	0.0566188	0.0543082	0.055532
	1	0.0535871	0.0516805	0.0498553
Discretion x Involvement	0 0	0.0696575	0.0674998	0.0743718
	0 1	0.0524799	0.0470113	0.0453178
	1 0	0.0509215	0.0485828	0.0478206
	1 1	0.0541417	0.0541233	0.0521977

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