Worker autonomy and wage divergence: Evidence from European survey data

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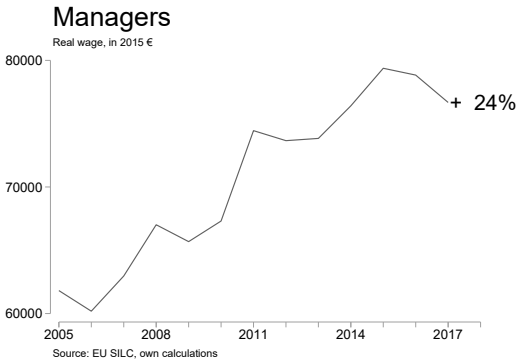
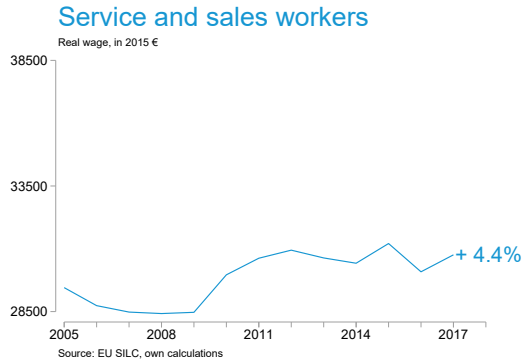
Wage growth diverges across occupations





Motivation

Wage growth at the occupation level

- Routinisation (Autor et al. 2003, Acemoglu and Autor 2011)
- Offshoring (Firpo et al. 2011)

$\rightarrow$ Worker autonomy (Wright 1997, Kalleberg 2003, Bloesch et al. 2021)

Research question

1. Does worker autonomy explain wage growth differences in Western Europe?

2. What are the technological, institutional, and demographic determinants of changes in the autonomy wage premium?

This paper

1. The first cross-country analysis of the effect of autonomy on wage growth

2. The first analysis of technological, institutional, and demographic factors that contribute to changes in the autonomy wage premium

Preview of findings

Wages in occupations with high autonomy have grown significantly faster

Workers in high autonomy occupations are at the top of the wage distribution

$\rightarrow$ Increase in wage inequality

Technological change contributes to rising autonomy premium

Collective bargaining mediates this effect

Worker autonomy

The degree of influence and control a worker has over her work

Harder to monitor and discipline, potential to disrupt

$\rightarrow$ Higher bargaining power

Sociology of work (Wright, 1997)

Marxist notion of labour discipline (Marx, 1981)

Efficiency wages (Akerlof, 1984)

Labour economics (Aghion et al. 2019, Bloesch et al. 2021)

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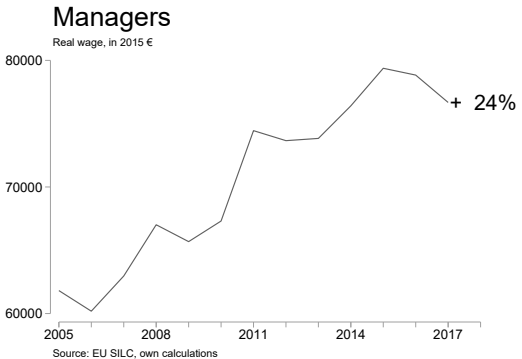
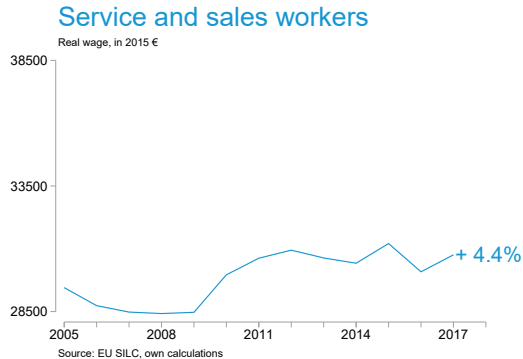




Worker autonomy and (occupational) wage growth

Technological change

Complements particular skills and tasks

Autonomy-biased

E.g., Deming (2021): Increasing demand for decision-making

Hypothesis 1: Higher worker autonomy $\rightarrow$ higher real wage growth

H2: Autonomy wage premium grows faster in countries/industries with faster technological change

Worker autonomy and collective bargaining

Collective bargaining compresses wage distribution (Freeman, 1982)

Collective bargaining differ across countries

H3: The autonomy wage premium is lower in countries with strong collective bargaining

Worker autonomy index

Main assumption: Autonomy as inherent feature of an occupation

Data on tasks across occupations from O*NET (Bureau of Labour Statistics)

Five index elements

- Making Decisions and Solving Problems
- Thinking Creatively
- Developing Objectives and Strategies
- Responsibility for Outcomes and Results
- Frequency of Decision Making

Firpo et al. (2011) use index to measure decision-making

Data

Wages

European Union Survey of Income and Living Conditions (EU SILC)

Wage survey, 800k observations

2003-2018, 15 countries; full-time, full-year employees

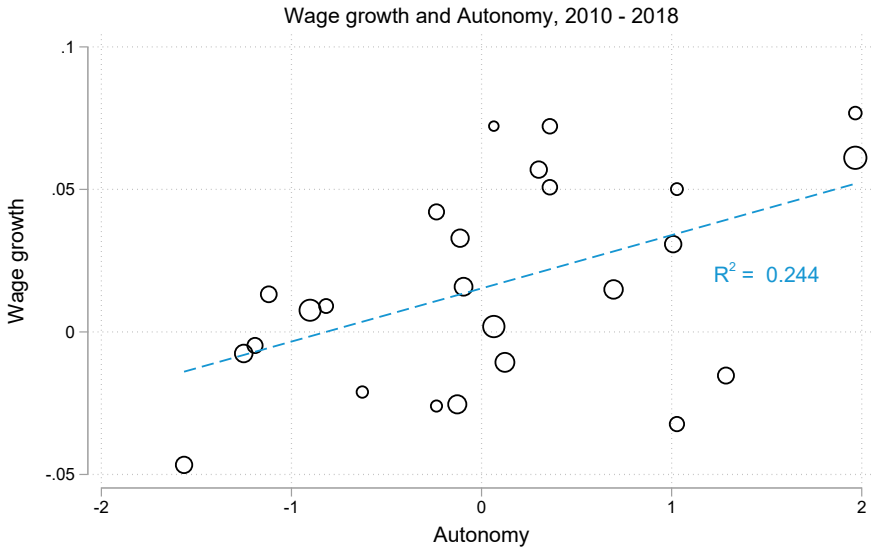
Technological change and collective bargaining

European Work Conditions Survey

OECD-AIAS-ICTWSS

Empirical analysis

Worker autonomy and wage growth are positively related



Notes: Circle sizes represent employment shares in 2010.

Empirical strategy

$$\ln(w_{ijkct}) = \beta_1(A_j \times t) + \beta_2(X_j \times t) + \mathrm{B}M_{ijkct} + \lambda_{jkc} + \theta_{kct} + \varepsilon_{ijkct}$$

$\ln(w_{ijkct})$, Real wage of worker i in occupation j, industry i, country c, year t

A_j, Worker autonomy index

t, Linear time trend

X_j, Other task-based measures (routinisation, offshoring)

M_{ijkct}, Demographic control variables (Mincer)

λ_{jkc}, Occupation-industry-country dummy

θ_{kct}, Industry-country-year dummy

Main finding

	ln wage
Autonomy	0.0027
	(0.0006)
Routinisation	0.0004
	(0.0006)
Offshoring	0.0003
	(0.0004)
Education	*Yes*
Age	*Yes*
Gender	*Yes*
Migrant	*Yes*
FE	
Occupation-industry-country	*Yes*
Industry-country-year	*Yes*
Number of observations: 808122	
R-squared (adj.): 0.853	
Standard errors in parentheses	

Annual wage growth difference

High vs. mean autonomy occupation: **0.27 pp**

This effect is statistically significant at the 1%-level

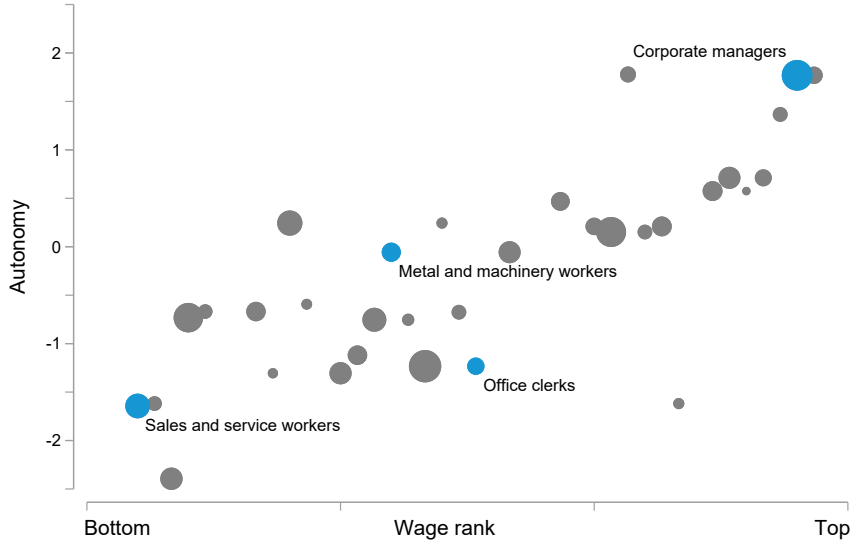
Economic interpretation

Wages in mean autonomy occupation grow by 1%
Wages in a high autonomy occupation grow by 1.27%

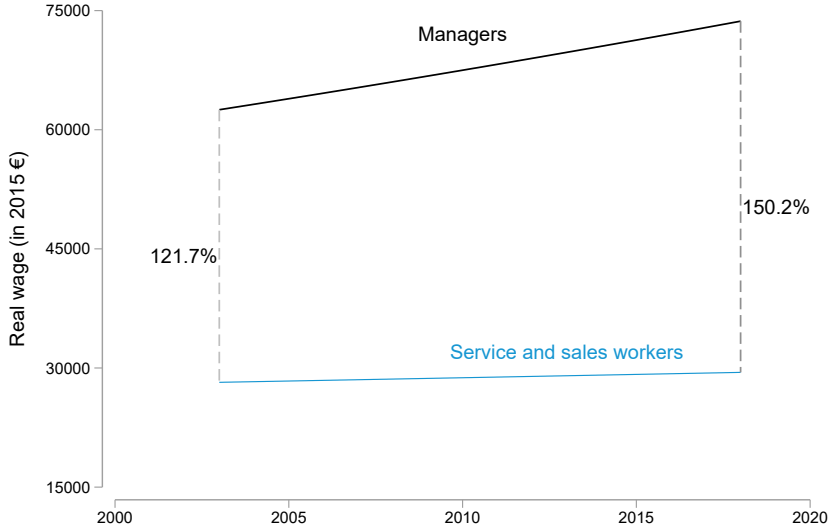
Compounded over 15 years:
Wage level difference of 4% (if occupations have same initial wage level)

Wage levels differ between high and low autonomy occupations

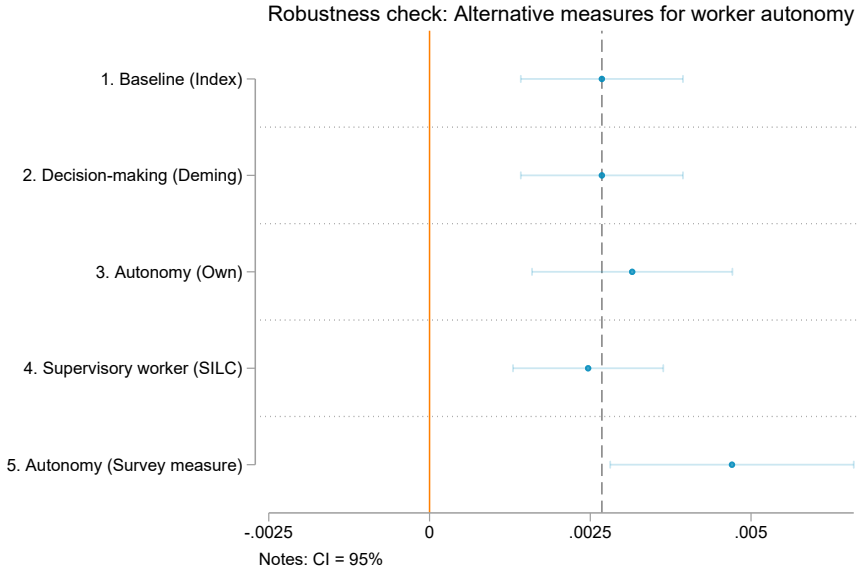
High autonomy workers are generally at the top of the wage distribution



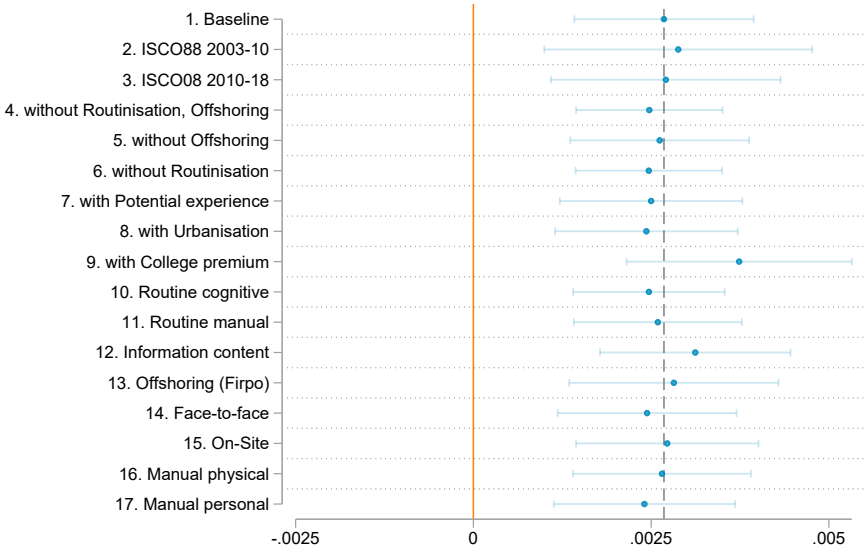
Autonomy: Wage gap between *Managers* and *Service workers* 28.5%⇑



Alternative autonomy measures confirm our main finding

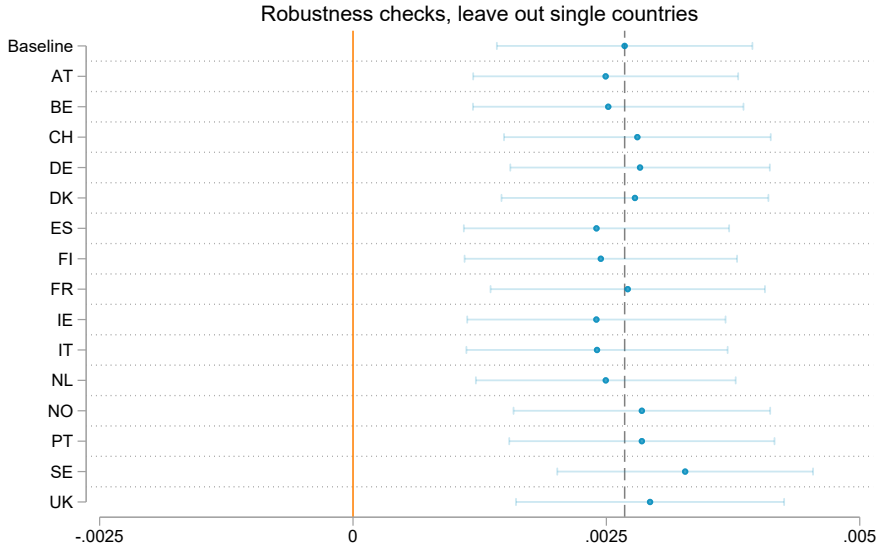


Further robustness checks

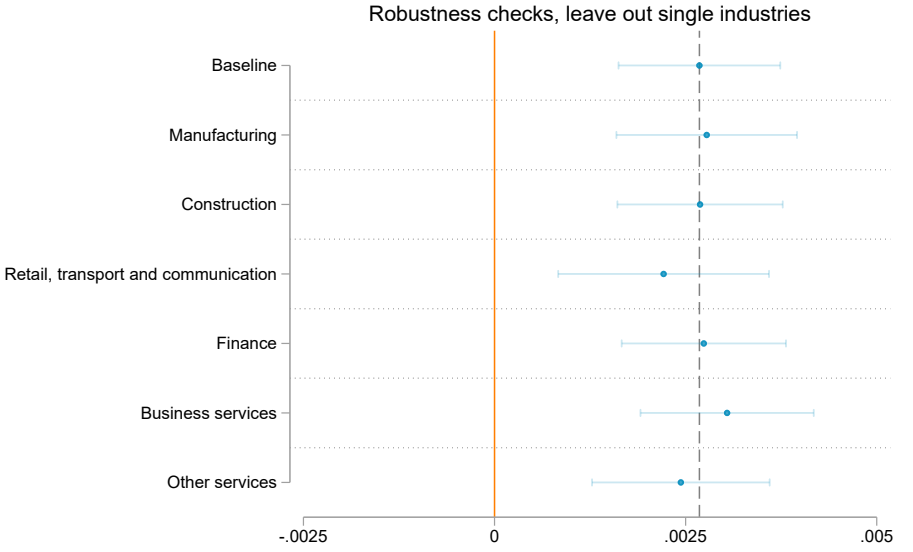


Notes: CI = 95%. The vertical dashed grey line shows our baseline autonomy estimate.

Robustness checks, leave out single countries



Robustness checks, leave out single industries



Worker autonomy explains wage growth patterns in Western Europe from 2003-2018

~~Routinisation~~

~~Offshoring~~

~~Increasing returns to education~~

~~Increasing return to STEM jobs (cognitive analytical)~~

Additional robustness checks

Variations of Mincer variables (experience, urbanisation, ...)

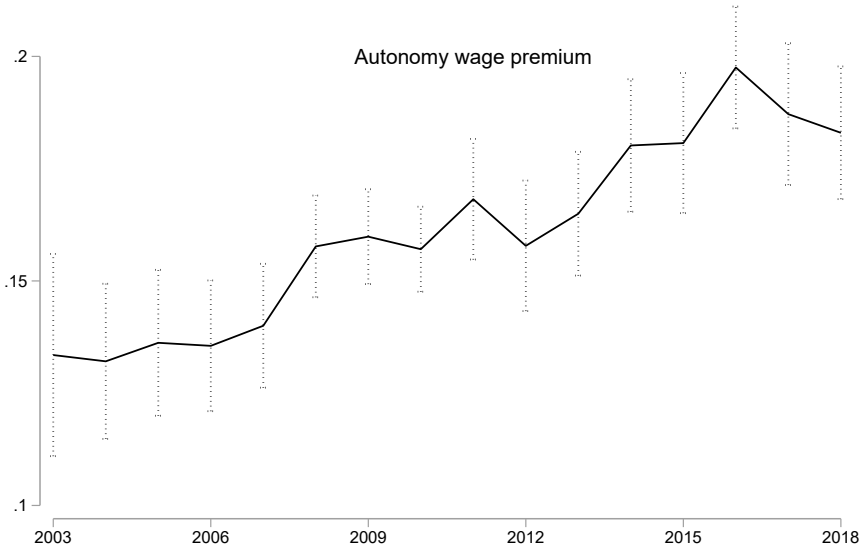
Time periods

1-digit occupation level

Alternative industry classification

Technology, institutions and demographics

The autonomy wage premium



Autonomy premium:
Rises faster in industries with faster technological change

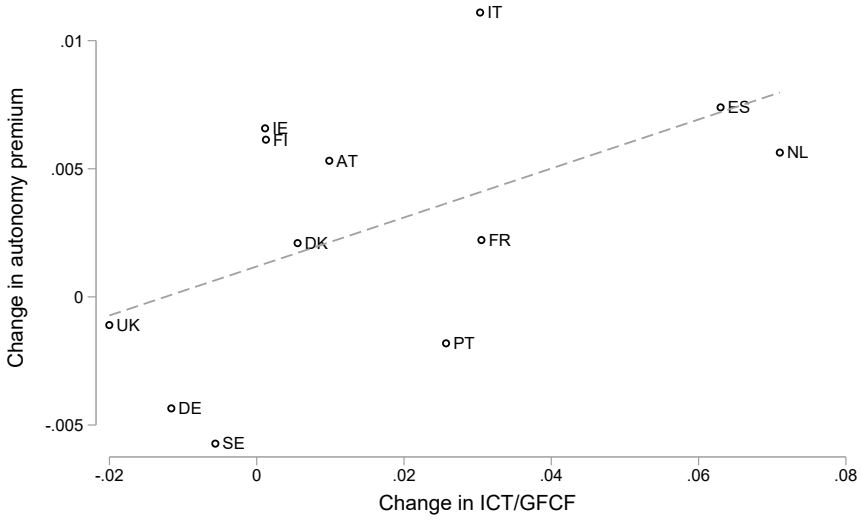
	Autonomy premium
Computer adoption	0.0293***
	(0.0109)
Observations	89
r2	0.2368

Standard errors in parentheses

Country-fixed effects: Yes

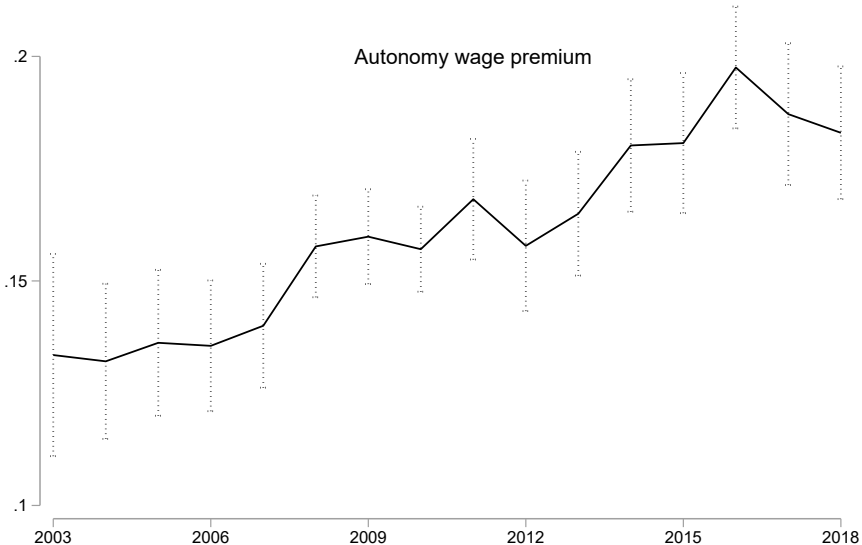
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

ICT investment and the autonomy premium

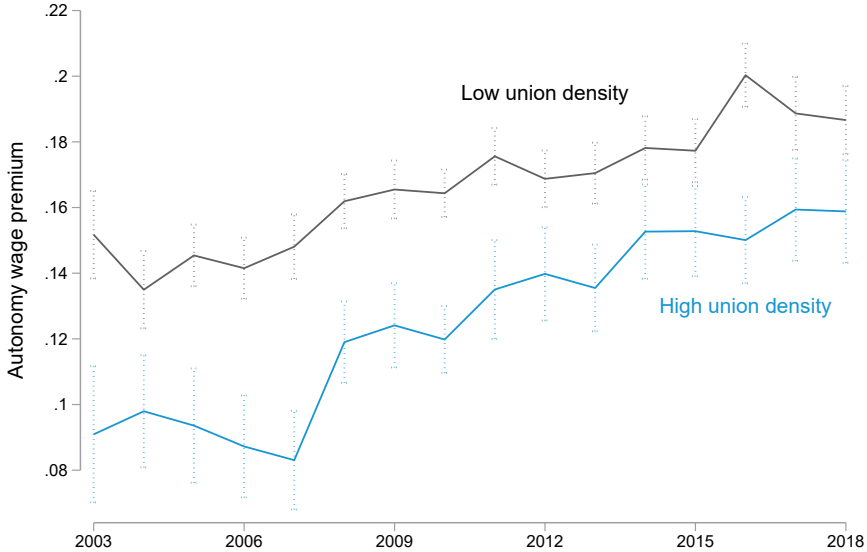


Coefficient: 0.10; P: 0.02

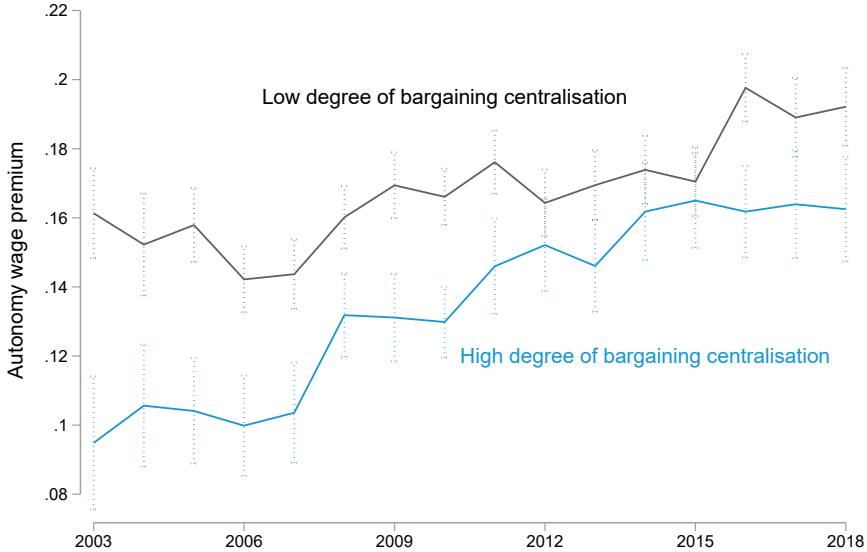
The autonomy wage premium



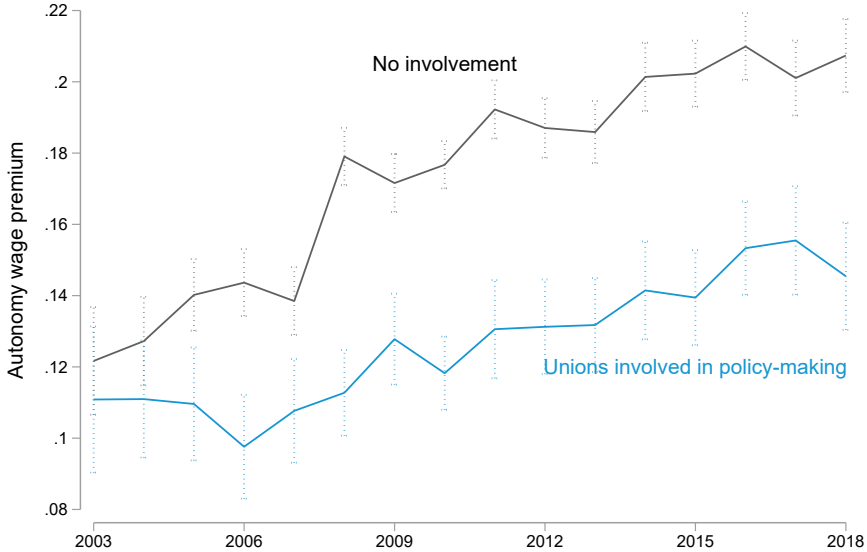
Autonomy premium and labour unions



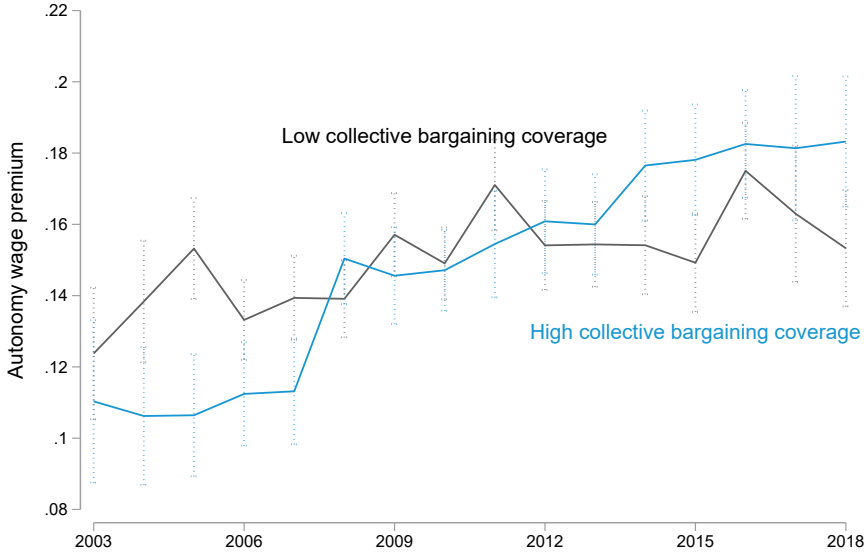
Autonomy premium and degree of bargaining coordination



Autonomy premium and involvement of unions in legislation



Autonomy premium and bargaining coverage



Worker autonomy and demographic characteristics

Autonomy interacts with age and experience

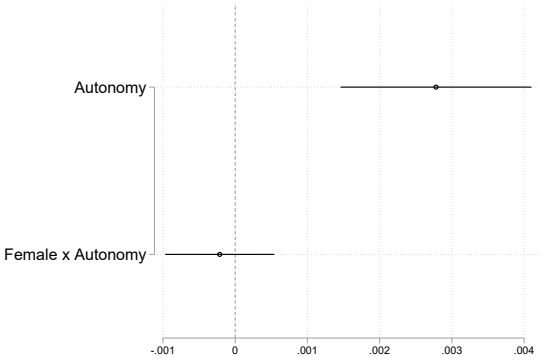
- High autonomy: Longer and more gradual periods of wage growth (Deming, 2021)

Autonomy interacts with degree of urbanisation

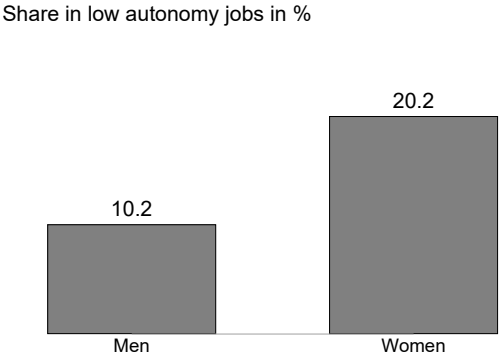
- Strong assortative matching in large cities (Dauth et al., 2022)

The autonomy wage premium and gender inequality

The autonomy wage premium does not affect women and men differently



But women are more often employed in low autonomy jobs



Bottom line

Worker autonomy explains wage growth divergence

$\rightarrow$ Increase in wage inequality

Faster computerisation increases the autonomy wage premium

Collective bargaining is a mediating factor

Autonomy interacts with age, experience and urbanisation

The autonomy wage premium increases gender inequality

Conclusion

Policy

Technology: Educational measures to re- and upskill workers

Collective bargaining: Strengthen bargaining institutions that span across occupations

Research

Other dimensions of autonomy

Employment patterns

Gender dimension

Get in touch

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