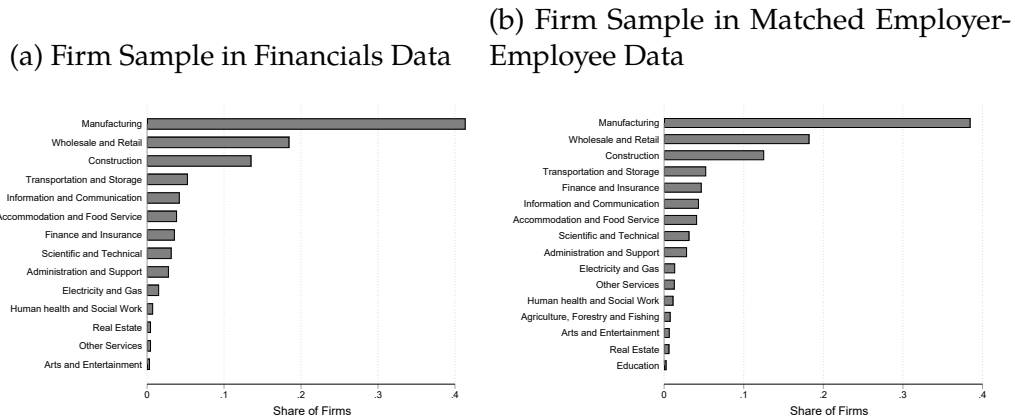


Online Appendix of: Voice at Work

Jarkko Harju, Simon Jäger, and Benjamin Schoefer

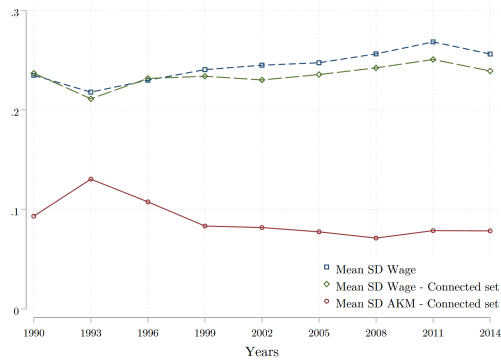
A Appendix Figures

Figure A.1: Industry Composition



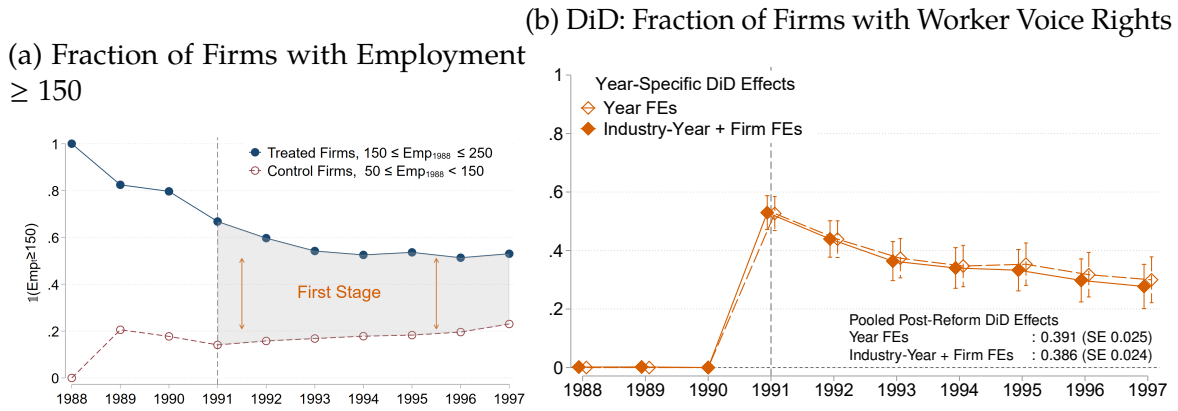
Note: The figure plots the industry composition of firms in our sample for the baseline year of 1990 (in which our control means of outcome variables are also specified, reported in the regression tables).

Figure A.2: Standard Deviation of Log Wages and AKM Firm Effects Over Time



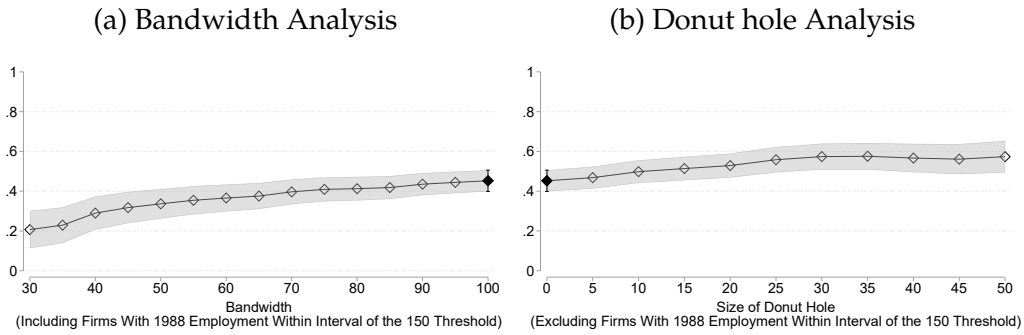
Note: The figure plots the standard deviation of individual log wages as well as of AKM firm effects over time. For the individual log wages, we both report the overall standard deviation as well as the standard deviation of individual wages of workers employed by firms in the largest connected sets (respectively for each three-year time window) from the AKM estimation. The AKM firm effects are estimated in three-year windows and we report the standard deviation for those firms in the largest connected set at each time horizon. The sample for this estimation is based on the entire matched employer-employee data (rather than the firm size window for our main analysis).

Figure A.3: Persistence of Treatment Assignment, EE Sample



Note: The figure is a robustness check for Figure 4. Here, the sample is based on matched employer-employee data while Figure 4 restricts the sample to observations for which we also match firm data. For further details on the panels, see figure note to Figure 4.

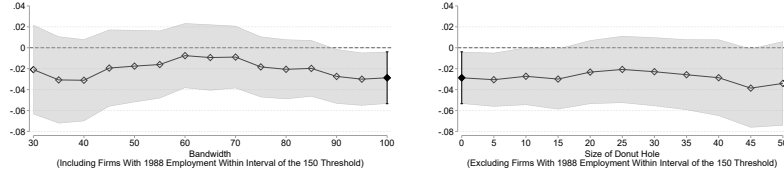
Figure A.4: Fraction of Firms with Worker Voice Rights (Robustness Checks)



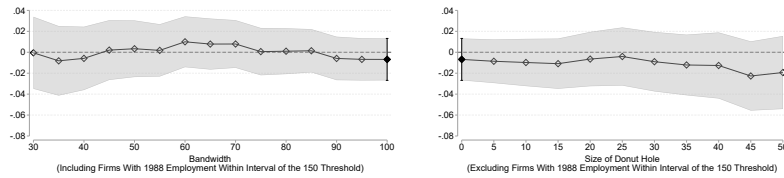
Note: The figure reports robustness checks for the DiD analysis in Figure 4. The outcome variable is an indicator for a firm being subject to worker voice rights governance (i.e. having at least 150 employees in the post-reform period). The figure plots DiD point estimates and 95% confidence intervals clustering standard errors at the firm level and including firm fixed effects and industry-year fixed effects. The upper panel varies the employment sample starting from a bandwidth of 10, i.e. 140-160, to a bandwidth of 100, our baseline specification indicated by the solid black diamond. The lower panel displays a donut hole specification starting from a hole size equal to 0, our baseline indicated by the black solid diamond, to a hole size equal to 50, excluding firms with employment between 100-200.

Figure A.5: Separations and Sickness (Robustness Checks)

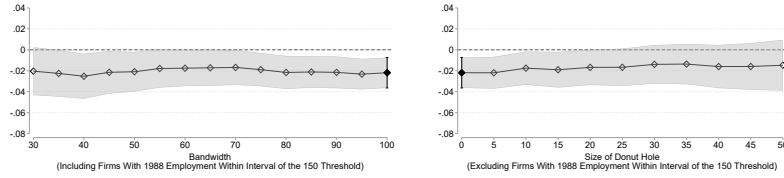
(a) Any Separation, Bandwidth (b) Any Separation, Donut hole



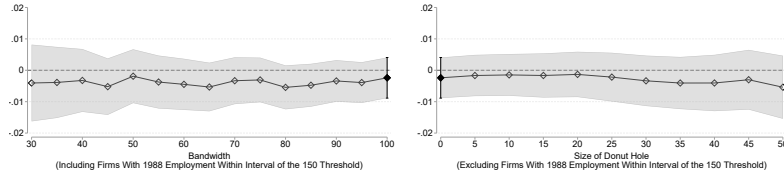
(c) Job-to-Job Separation, Bandwidth (d) Job-to-Job Separation, Donut hole



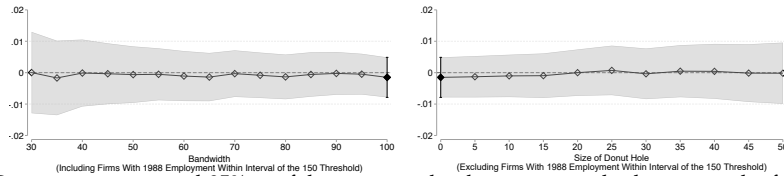
(e) Sep. into Nonemployment, Bandwidth (f) Sep. into Nonemployment, Donut hole



(g) Sickness, Older than 40, Bandwidth (h) Sickness, Older than 40, Donut hole



(i) Sickness, Male, Bandwidth (j) Sickness, Male, Donut hole



Note: The figure plots DiD point estimates and 95% confidence intervals, clustering standard errors at the firm level and including firm fixed effects and industry-year fixed effects. The left column varies the employment sample starting from a bandwidth of 10, 140-160, to a bandwidth of 100, our baseline specification indicated by the solid black diamond. The right column displays the donut hole specification starting from a hole size equal to 0, our baseline indicated by the black solid diamond, to a hole size equal to 50, excluding firms with employment between 100-200. We display the corresponding baseline results in Figure 5 and Table 1.

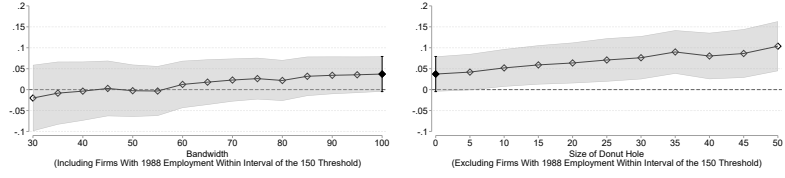
Figure A.6: Wage Effects (Robustness Checks)



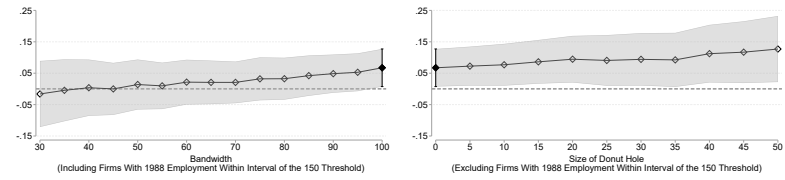
Note: The figure plots DiD point estimates and 95% confidence intervals, clustering standard errors at the firm level and including firm fixed effects and industry-year fixed effects. The left column varies the employment sample starting from a bandwidth of 10, 140-160, to a bandwidth of 100, our baseline specification indicated by the solid black diamond. The right column displays the donut hole specification starting from a hole size equal to 0, our baseline indicated by the black solid diamond, to a hole size equal to 50, excluding firms with employment between 100-200. We display the corresponding baseline results in Figure 6 and Table 2.

Figure A.7: Firm Performance (Robustness Checks)

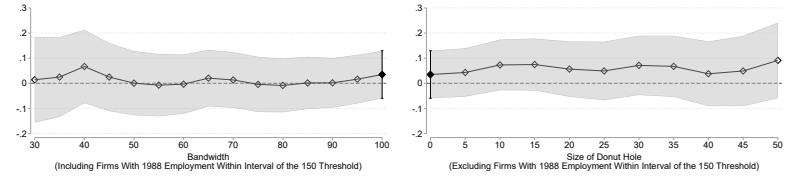
(a) Firm Survival, Bandwidth (b) Firm Survival, Donut hole



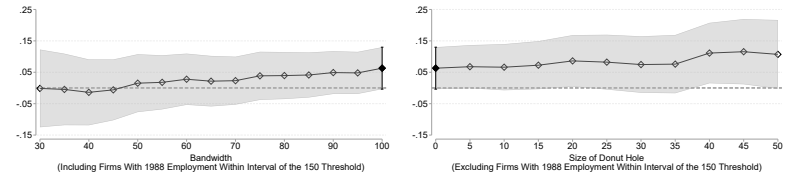
(c) Log Value Added per Worker, Bandwidth (d) Log Value Added per Worker, Donut hole



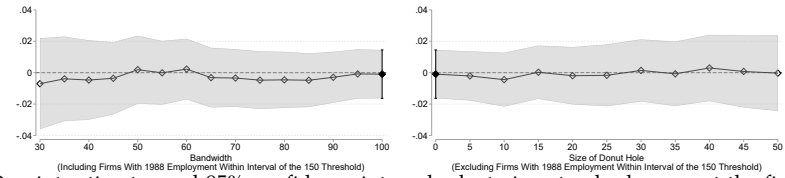
(e) Capital Intensity, Bandwidth (f) Capital Intensity, Donut hole



(g) Total Factor Productivity, Bandwidth (h) Total Factor Productivity, Donut hole

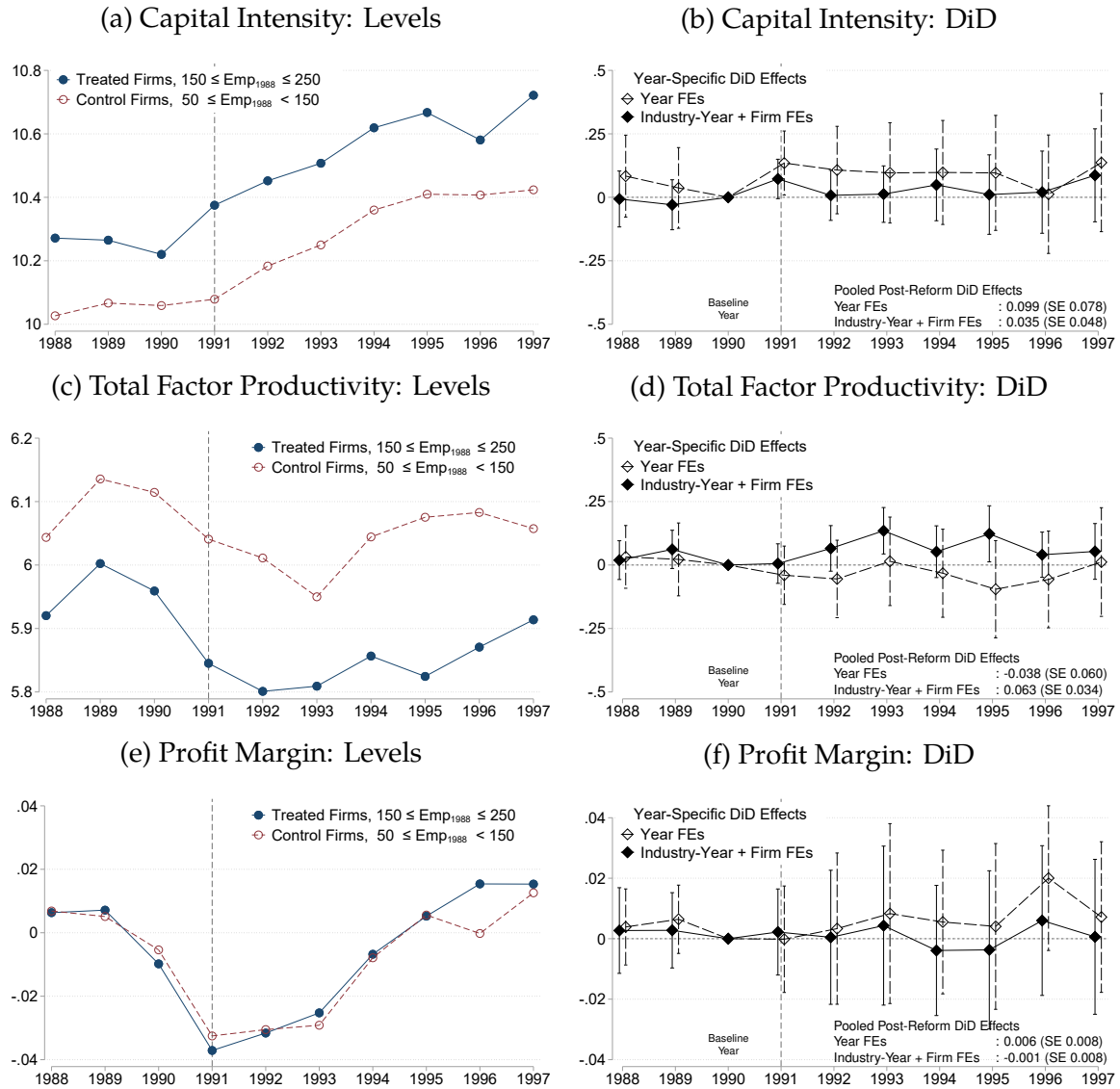


(i) Profit Margin, Bandwidth (j) Profit Margin, Donut hole



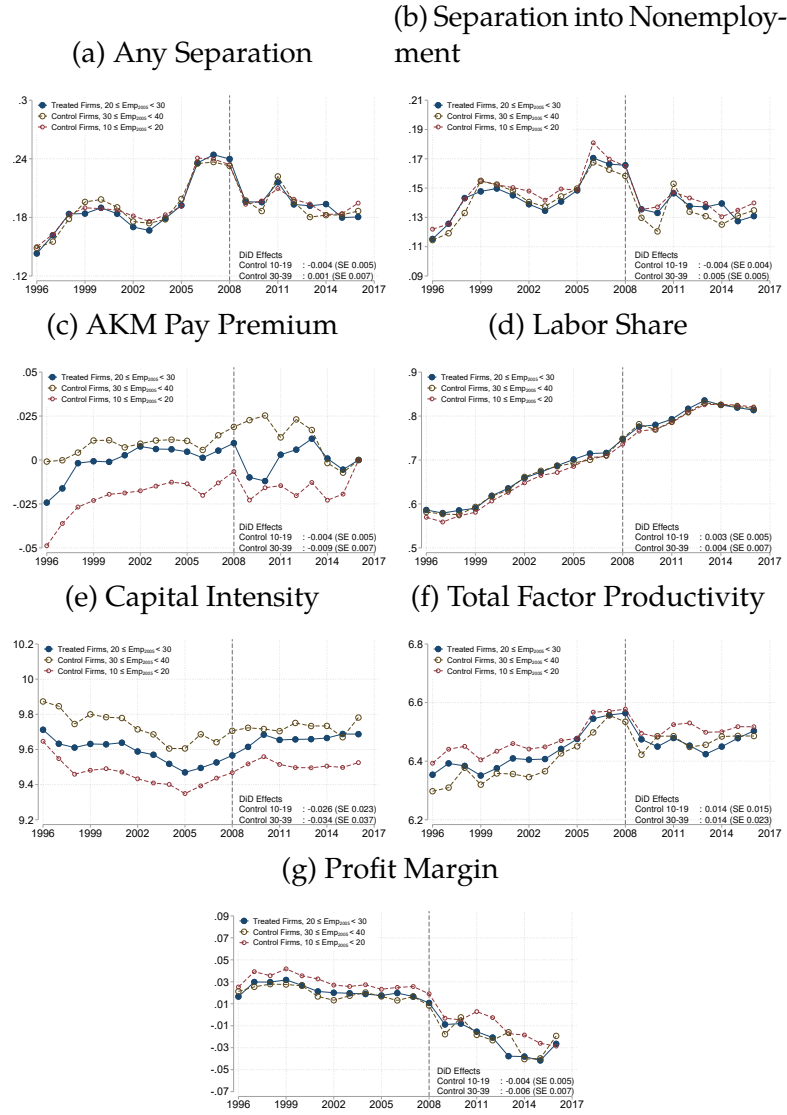
Note: The figure plots DiD point estimates and 95% confidence intervals clustering standard errors at the firm level and including firm fixed effects and industry-year fixed effects. The left column varies the employment sample starting from a bandwidth of 10, 140-160, to a bandwidth of 100, our baseline specification indicated by the solid black diamond. The right column displays the donut hole specification starting from a hole size equal to 0, our baseline indicated by the black solid diamond, to a hole size equal to 50, excluding firms with employment between 100-200. We display the corresponding baseline results in Figure 7 and Table 3.

Figure A.8: Firm Performance (Additional Outcomes)



Note: The figure displays the effects of worker voice rights on capital intensity, total factor productivity and the profit margin. The left column displays the outcome in levels for treated firms (firms with employment between 150-250 in 1988) and for control firms (firms with employment between 50-149 in 1988) over the period 1988-1997. The right column displays the difference-in-differences estimates decomposed by years normalized by baseline year 1990. Main results in Figure 7. We report the pooled post-reform effect in the bottom right corner of each plot and in Table 3.

Figure A.9: Shop-Floor Representation Reform (Additional Outcomes)



Note: The figure extends Figure 8 to other outcomes. It displays the effects of a 2008 reform that lowered the threshold for mandatory shop-floor representation from 30 to 20 employees. We report the pooled post-reform effect in the each plot and in Tables A.11 and A.12

B Appendix Tables

Table A.1: Survey Evidence on Prevalence and Forms of Worker Representation in Finnish Firms

	Panel (a): Do you have an administrative representative?			
	2001	2017	2019	2020
Yes	60%	51%	47%	63%
No	36%	40%	48%	37%
Missing response	4%	9%	5%	0%
	Panel (b): In which governance body do the worker representatives participate?			
	2001	2017	2019	2020
Management	60%	32%	37%	28%
Board of directors	26%	23%	24%	32%
Supervisory board	6%	17%	8%	7%
Elsewhere	9%	23%	23%	24%
Missing response	0%	5%	8%	9%
	Panel (c): What is the legal basis for this representation?			
	2001	2017	2019	2020
According to the law	-	26%	25%	31%
According to agreement	-	40%	59%	54%
Other	-	-	11%	4%
Missing response	-	35%	5%	10%
	Panel (d): If you meet the threshold, why is there no worker representation?			
	2001	2017	2019	2020
The employer did not want it	34%	40%	45%	49%
The employees did not want it	-	1%	5%	3%
Not aware of the right	14%	6%	8%	11%
Can't say	27%	19%	22%	-
Other reason	25%	33%	22%	38%
N	203	288	164	111
Restricted to ≥ 150 employees	No	Yes	Yes	Yes

Note: The table presents results from four separate surveys of Finnish worker representatives, asking whether and in what form they have implemented the worker representation introduced by the 1991 law. The 2001 survey was conducted among representatives who are members of the Finnish metalworks union, and covered 203 shop-floor representatives in metal and electronics companies (Sairo, 2001). This survey, unlike the others, is *not* restricted to firms above the 150 employee threshold and in these tabulations the sample is not restricted to those firms (these numbers are from a report and we cannot access the raw data and hence cannot re-calculate these numbers with the restriction imposed). However, 73% of respondents are in firms above the threshold. The 2017 and 2019 surveys were conducted by a major Finnish trade union federation for industrial employees, and covered 288 and 164 firms with more than 150 employees (Teollisuuden Palkansaajat, 2019). Respondents were worker representatives of various kinds (e.g., shop-floor representatives, European Works Council representatives) in those firms. The 2020 survey was conducted by us in cooperation with the same trade union federation, and covered 111 worker representatives of various kinds. The first panel reports responses to a question about whether the company has organised formal worker representation, and the second panel reports responses to a question about which governing body the representatives sit on, if they exist. Examples of responses from the free-form “Other” category for the body of representation include representation in multiple bodies, regular meetings between top management and worker representatives, and advisory boards. The “Missing response” category indicates respondents who did not know the answer or whose response was missing for a different reason. The third panel reports responses regarding the legal basis for the worker representation.

Table A.2: Significance Levels Adjusted For Multiple Hypothesis Testing

	Any Separation	Job-to-Job Separation	Separation into Nonemployment	Sickness Spell (Older than 40)	Sickness Spell (Male)	Log Wage	AKM	Labor share	Survival	log(VA/worker)	Capital Intensity	TFP	Profit margin
<i>Multiple hypothesis testing: alternative p-values</i>													
Baseline model	0.028	0.597	0.002	0.890	0.479	0.048	0.039	0.395	0.170	0.074	0.916	0.083	0.666
Resample	0.011	0.528	0.001	0.848	0.349	0.009	0.007	0.293	0.058	0.019	0.880	0.029	0.595
Romano-Wolf	0.066	0.935	0.004	0.984	0.883	0.100	0.079	0.846	0.058	0.174	0.984	0.193	0.935

Note: The table reports p -values for the effects on our main outcome variables. The first row reports conventional p -values stemming from our specification with industry-year and firm fixed effects. The second row reports p -values based on resampling with 1000 bootstrap replications. The last row reports p -values accounting for multiple hypothesis testing with 1000 bootstrap replications using `rwolf2` Stata package.

Table A.3: Full Results: Second Stage Specifications for Effects on Separations and Job Quality Measures

	Any Separation (1)	Job-to-Job Separation (2)	Separation into Nonemployment (3)	Firm Value Log Index (z-score) (4)	Sickness Spell (Older than 40) (5)	Sickness Spell (Male) (6)
<i>DiD: Year FEs</i>						
Treatment (1991-1997)	-0.046 (0.037)	-0.031 (0.029)	-0.014 (0.020)	-0.103 (0.256)	-0.005 (0.009)	-0.003 (0.008)
<i>DiD: Industry-Year FEs</i>						
Treatment (1991-1997)	-0.032 (0.036)	-0.026 (0.028)	-0.006 (0.019)	-0.116 (0.246)	-0.006 (0.009)	-0.005 (0.008)
<i>DiD: Year and Firm FEs</i>						
Treatment (1991-1997)	-0.070** (0.033)	-0.015 (0.027)	-0.056*** (0.019)	-0.116 (0.258)	-0.006 (0.009)	-0.005 (0.008)
<i>DiD: Industry-Year and Firm FEs</i>						
Treatment (1991-1997)	-0.074** (0.033)	-0.018 (0.026)	-0.057*** (0.019)	-0.142 (0.246)	-0.006 (0.009)	-0.004 (0.008)
1990 Average (Control):	0.249	0.079	0.170	-0.086	0.070	0.070
1990 Average (Treated):	0.252	0.097	0.155	-0.126	0.075	0.075
N, Firm-Years (Control):	8,600	8,600	8,600	5,554	8,537	8,510
N, Firm-Years (Treated):	1,825	1,825	1,825	1,777	1,819	1,821

Note: The table reports the second stage from the IV specification based on firm size as in Equation (4) for the full series of control variable sets; the corresponding first-stage results from Equation (3) are reported in Appendix Table A.6. Standard errors clustered at the firm level are reported in parentheses. * p<0.1; ** p<0.05; *** p<0.01.

Table A.4: Full Results: Second Stage Specifications for Effects on Wages

	Mean Log Wage (1)	AKM Pay Premium (2)	Labor Share (3)
<i>DiD: Year FEs</i>			
Treatment (1991-1997)	0.085** (0.040)	0.047** (0.021)	-0.021 (0.029)
<i>DiD: Industry-Year FEs</i>			
Treatment (1991-1997)	0.044 (0.037)	0.038* (0.021)	-0.013 (0.029)
<i>DiD: Year and Firm FEs</i>			
Treatment (1991-1997)	0.091*** (0.033)	0.047* (0.025)	-0.035 (0.027)
<i>DiD: Industry-Year and Firm FEs</i>			
Treatment (1991-1997)	0.063** (0.031)	0.042* (0.025)	-0.044 (0.028)
1990 Average (Control):	9.459	0.023	0.600
1990 Average (Treated):	9.491	0.033	0.576
N, Firm-Years (Control):	8,646	7,058	5,015
N, Firm-Years (Treated):	1,833	1,470	1,240

Note: The table reports the second stage from the IV specification based on firm size as in Equation (4) for the full series of control variable sets; the corresponding first-stage results from Equation (3) are reported in Appendix Table A.7. Standard errors clustered at the firm level are reported in parentheses. * p<0.1; ** p<0.05; *** p<0.01.

Table A.5: Full Results: Second Stage Specifications for Effects on Firm Performance

	Firm Survival (1)	Log Value Added per Worker (2)	Capital Intensity (3)	Total Factor Productivity (4)	Profit Margin (5)
<i>DiD: Year FEs</i>					
Treatment (1991-1997)	0.094* (0.056)	0.090 (0.073)	0.208 (0.165)	-0.078 (0.125)	0.014 (0.017)
<i>DiD: Industry-Year FEs</i>					
Treatment (1991-1997)	0.101* (0.056)	0.082 (0.071)	0.117 (0.159)	0.039 (0.102)	0.010 (0.017)
<i>DiD: Year and Firm FEs</i>					
Treatment (1991-1997)	0.094* (0.056)	0.134** (0.062)	0.074 (0.099)	0.112 (0.072)	-0.001 (0.016)
<i>DiD: Industry-Year and Firm FEs</i>					
Treatment (1991-1997)	0.101* (0.056)	0.132** (0.062)	0.070 (0.097)	0.124* (0.069)	-0.002 (0.016)
1990 Average (Control):	0.930	10.499	10.059	6.115	-0.005
1990 Average (Treated):	0.935	10.560	10.220	5.959	-0.010
N, Firm-Years (Control):	12,600	4,939	4,996	4,939	5,010
N, Firm-Years (Treated):	2,568	1,215	1,231	1,219	1,239

Note: The table reports the second stage from the IV specification based on firm size as in Equation (4) for the full series of control variable sets; the corresponding first-stage results from Equation (3) are reported in Appendix Table A.8. Standard errors clustered at the firm level are reported in parentheses. * p<0.1; ** p<0.05; *** p<0.01.

Table A.6: First Stage Specifications for Effects on Separations and Job Quality Measures

	Any Separation (1)	Job-to-Job Separation (2)	Separation into Nonemployment (3)	Firm Value Log Index (z-score) (4)	Sickness Spell (Older than 40) (5)	Sickness Spell (Male) (6)
<i>First stage: Year FEs</i>						
Above 150 (1991-1997)	0.394*** (0.025)	0.394*** (0.025)	0.394*** (0.025)	0.412*** (0.029)	0.393*** (0.025)	0.394*** (0.025)
<i>First stage: Industry-Year FEs</i>						
Above 150 (1991-1997)	0.397*** (0.025)	0.397*** (0.025)	0.397*** (0.025)	0.423*** (0.029)	0.397*** (0.025)	0.397*** (0.025)
<i>First stage: Year and Firm FEs</i>						
Above 150 (1991-1997)	0.385*** (0.024)	0.385*** (0.024)	0.385*** (0.024)	0.413*** (0.028)	0.384*** (0.024)	0.384*** (0.024)
<i>First stage: Industry-Year and Firm FEs</i>						
Above 150 (1991-1997)	0.388*** (0.024)	0.388*** (0.024)	0.388*** (0.024)	0.426*** (0.028)	0.386*** (0.024)	0.386*** (0.024)
<i>N, Firm-Years (Control):</i>	8,600	8,600	8,600	5,554	8,537	8,510
<i>N, Firm-Years (Treated):</i>	1,825	1,825	1,825	1,777	1,819	1,821

Note: The table reports first-stage results from estimating Equation (3). The outcome variable in each specification is a measure of worker voice rights ($\text{VoiceRight}_{it} = \mathbb{1}[\text{Emp}_{i,t} \geq 150 \wedge t \geq 1991]$). Columns differ only by sample; each column head reports the respective outcome variable to which a given first-stage specification corresponds to account for potential sample differences. Table 1 reports the corresponding reduced-form and second-stage results. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table A.7: First Stage Specifications for Effects on Wages

	Mean Log Wage (1)	AKM Pay Premium (2)	Labor Share (3)
<i>First stage: Year FEs</i>			
Above 150 (1991-1997)	0.388*** (0.025)	0.417*** (0.027)	0.472*** (0.031)
<i>First stage: Industry-Year FEs</i>			
Above 150 (1991-1997)	0.392*** (0.025)	0.418*** (0.027)	0.466*** (0.031)
<i>First stage: Year and Firm FEs</i>			
Above 150 (1991-1997)	0.380*** (0.024)	0.392*** (0.027)	0.498*** (0.032)
<i>First stage: Industry-Year and Firm FEs</i>			
Above 150 (1991-1997)	0.383*** (0.024)	0.390*** (0.027)	0.496*** (0.031)
 N, Firm-Years (Control):	 8,646	 7,058	 5,015
N, Firm-Years (Treated):	1,833	1,470	1,240

Note: The table reports first-stage results from estimating Equation (3). The outcome variable in each specification is a measure of worker voice rights ($\text{VoiceRight}_{it} = \mathbb{1}[\text{Emp}_{i,t} \geq 150 \wedge t \geq 1991]$). Columns differ only by sample; each column head reports the respective outcome variable to which a given first-stage specification corresponds to account for potential sample differences. Table 2 reports the corresponding reduced-form and second-stage results. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table A.8: First Stage Specifications for Effects on Firm Performance

	Firm Survival (1)	Log Value Added per Worker (2)	Capital Intensity (3)	Total Factor Productivity (4)	Profit Margin (5)
<i>First stage: Year FEs</i>					
Above 150 (1991-1997)	0.369*** (0.024)	0.482*** (0.032)	0.475*** (0.031)	0.482*** (0.032)	0.474*** (0.031)
<i>First stage: Industry-Year FEs</i>					
Above 150 (1991-1997)	0.367*** (0.024)	0.478*** (0.031)	0.469*** (0.031)	0.477*** (0.031)	0.469*** (0.031)
<i>First stage: Year and Firm FEs</i>					
Above 150 (1991-1997)	0.369*** (0.024)	0.511*** (0.032)	0.501*** (0.032)	0.510*** (0.032)	0.499*** (0.032)
<i>First stage: Industry-Year and Firm FEs</i>					
Above 150 (1991-1997)	0.367*** (0.024)	0.510*** (0.031)	0.499*** (0.031)	0.509*** (0.031)	0.497*** (0.031)
N, Firm-Years (Control):	12,600	4,939	4,996	4,939	5,010
N, Firm-Years (Treated):	2,568	1,215	1,231	1,219	1,239

Note: The table reports first-stage results from estimating Equation (3). The outcome variable in each specification is a measure of worker voice rights ($\text{VoiceRight}_{it} = 1[\text{Emp}_{i,t} \geq 150 \wedge t \geq 1991]$). Columns differ only by sample; each column head reports the respective outcome variable to which a given first-stage specification corresponds to account for potential sample differences. Table 3 reports the corresponding reduced-form and second-stage results. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table A.9: Effects on Separations and Sickness (Robustness Checks)

	Correcting Spurious ID Changes			With at Least One Year of Tenure			Employees Aged 20-55		
	Any Separation (1)	Job-to-Job Separation (2)	Separation into Nonemployment (3)	Any Separation (4)	Job-to-Job Separation (5)	Separation into Nonemployment (6)	Any Separation (7)	Job-to-Job Separation (8)	Separation into Nonemployment (9)
<i>DiD: Year FEs</i>									
Treatment (1991-1997)	-0.018 (0.014)	-0.012 (0.011)	-0.006 (0.008)	-0.021 (0.015)	-0.015 (0.012)	-0.006 (0.008)	-0.021 (0.015)	-0.014 (0.012)	-0.007 (0.008)
Pre-Period (1988-1989)	-0.000 (0.014)	-0.001 (0.011)	0.000 (0.007)	-0.003 (0.014)	-0.003 (0.012)	-0.000 (0.007)	0.000 (0.014)	-0.001 (0.012)	0.001 (0.007)
<i>DiD: Industry-Year FEs</i>									
Treatment (1991-1997)	-0.012 (0.014)	-0.010 (0.011)	-0.002 (0.008)	-0.014 (0.015)	-0.013 (0.012)	-0.001 (0.008)	-0.014 (0.015)	-0.012 (0.012)	-0.002 (0.008)
Pre-Period (1988-1989)	0.000 (0.013)	-0.001 (0.011)	0.001 (0.007)	-0.004 (0.014)	-0.003 (0.012)	-0.000 (0.007)	0.002 (0.014)	-0.001 (0.012)	0.003 (0.007)
<i>DiD: Year and Firm FEs</i>									
Treatment (1991-1997)	-0.026** (0.013)	-0.005 (0.010)	-0.021*** (0.007)	-0.026* (0.014)	-0.008 (0.011)	-0.019** (0.008)	-0.026** (0.013)	-0.003 (0.011)	-0.023*** (0.007)
Pre-Period (1988-1989)	-0.005 (0.012)	-0.008 (0.010)	0.003 (0.006)	-0.010 (0.014)	-0.010 (0.012)	0.000 (0.006)	-0.004 (0.013)	-0.007 (0.011)	0.003 (0.007)
<i>DiD: Industry-Year and Firm FEs</i>									
Treatment (1991-1997)	-0.027** (0.013)	-0.006 (0.010)	-0.022*** (0.007)	-0.024* (0.013)	-0.006 (0.011)	-0.018** (0.008)	-0.027** (0.013)	-0.003 (0.011)	-0.024*** (0.008)
Pre-Period (1988-1989)	-0.002 (0.012)	-0.006 (0.010)	0.004 (0.006)	-0.009 (0.013)	-0.009 (0.012)	-0.001 (0.007)	-0.001 (0.013)	-0.006 (0.011)	0.005 (0.007)
1990 Average (Control):	0.249	0.079	0.170	0.207	0.079	0.128	0.249	0.081	0.168
1990 Average (Treated)	0.252	0.097	0.155	0.218	0.100	0.118	0.251	0.099	0.152
N, Firm-Years (Control):	8,635	8,635	8,635	8,235	8,235	8,235	7,988	7,988	7,988
N, Firm-Years (Treated):	1,833	1,833	1,833	1,787	1,787	1,787	1,684	1,684	1,684

Note: The table reports results of robustness checks for the separation outcomes analyzed in Figure 5 and Table 1. * p<0.1; ** p<0.05; *** p<0.01.

Table A.10: Effects on Within-Firm Wage Structure

	Log Wage in Within-Firm Wage Percentile									Executive (Log) Wage (10)	Executive Wage & Capital Income (11)
	p10 (1)	p20 (2)	p30 (3)	p40 (4)	p50 (5)	p60 (6)	p70 (7)	p80 (8)	p90 (9)		
<i>DiD: Year FEs</i>											
Treatment (1991-1997)	0.069** (0.032)	0.058** (0.025)	0.037* (0.020)	0.035** (0.016)	0.028** (0.014)	0.023* (0.013)	0.020 (0.013)	0.014 (0.013)	0.015 (0.014)	-0.044 (0.039)	0.039 (0.045)
Pre-Period (1988-1989)	0.006 (0.030)	-0.003 (0.022)	-0.007 (0.017)	-0.004 (0.014)	-0.005 (0.012)	-0.006 (0.011)	-0.010 (0.011)	-0.015 (0.010)	-0.012 (0.011)	0.001 (0.037)	-0.020 (0.044)
<i>DiD: Industry-Year FEs</i>											
Treatment (1991-1997)	0.045 (0.031)	0.034 (0.024)	0.017 (0.019)	0.016 (0.015)	0.012 (0.013)	0.010 (0.013)	0.010 (0.013)	0.005 (0.013)	0.009 (0.014)	-0.046 (0.039)	0.037 (0.045)
Pre-Period (1988-1989)	-0.011 (0.029)	-0.015 (0.022)	-0.019 (0.016)	-0.016 (0.013)	-0.015 (0.011)	-0.014 (0.010)	-0.018* (0.010)	-0.020** (0.010)	-0.014 (0.010)	0.012 (0.037)	-0.015 (0.045)
<i>DiD: Year and Firm FEs</i>											
Treatment (1991-1997)	0.055** (0.028)	0.063*** (0.021)	0.045*** (0.017)	0.045*** (0.014)	0.035*** (0.012)	0.027** (0.011)	0.024** (0.011)	0.018 (0.011)	0.021* (0.012)	0.008 (0.035)	0.067 (0.041)
Pre-Period (1988-1989)	0.002 (0.026)	-0.005 (0.018)	-0.011 (0.013)	-0.005 (0.010)	-0.003 (0.008)	-0.000 (0.007)	-0.003 (0.007)	-0.006 (0.007)	-0.003 (0.007)	0.024 (0.025)	0.019 (0.031)
<i>DiD: Industry-Year and Firm FEs</i>											
Treatment (1991-1997)	0.042 (0.027)	0.053*** (0.020)	0.035** (0.016)	0.035*** (0.013)	0.025** (0.011)	0.017 (0.011)	0.014 (0.011)	0.008 (0.011)	0.010 (0.011)	-0.004 (0.035)	0.053 (0.041)
Pre-Period (1988-1989)	-0.003 (0.026)	-0.006 (0.018)	-0.014 (0.012)	-0.009 (0.010)	-0.007 (0.008)	-0.004 (0.007)	-0.007 (0.007)	-0.011* (0.007)	-0.007 (0.007)	0.021 (0.026)	0.013 (0.032)
1990 Average (Control):	8.528	9.062	9.333	9.501	9.622	9.722	9.820	9.932	10.110	10.508	10.806
1990 Average (Treated):	8.576	9.116	9.384	9.538	9.649	9.744	9.841	9.954	10.125	10.709	11.077
N, Firm-Years (Control):	8,684	8,684	8,684	8,684	8,684	8,684	8,684	8,684	8,684	6,766	6,773
N, Firm-Years (Treated):	1,839	1,839	1,839	1,839	1,839	1,839	1,839	1,839	1,839	1,614	1,615

Note: The table reports DiD effects on different percentiles of the within-firm wage distribution. See Table note for Table 2 for more information.

* p<0.1; ** p<0.05; *** p<0.01.

Table A.11: Effects on Separations and Measures of Job Quality, 2008 Reform

	Any Separation (1)	Job-to-Job Separation (2)	Separation into Nonemployment (3)	Sickness Spell (Older than 40) (4)	Sickness Spell (Male) (5)	Job Quality (z-score) (6)	Labor Relations Quality (z-score) (7)
<i>DiD: Year FEs</i>							
Smaller Control Firms (10 ≤ Emp ₂₀₀₅ < 20)	-0.003 (0.005)	-0.005 (0.004)	0.002 (0.004)	-0.004 (0.003)	-0.000 (0.003)	0.229 (0.167)	0.344** (0.153)
Larger Control Firms (30 ≤ Emp ₂₀₀₅ < 40)	-0.004 (0.008)	-0.006 (0.005)	0.001 (0.005)	-0.003 (0.004)	0.003 (0.004)	0.267 (0.213)	0.009 (0.199)
<i>DiD: Industry-Year FEs</i>							
Smaller Control Firms (10 ≤ Emp ₂₀₀₅ < 20)	-0.003 (0.005)	-0.004 (0.004)	0.001 (0.004)	-0.004 (0.003)	-0.000 (0.003)	0.211 (0.165)	0.286* (0.154)
Larger Control Firms (30 ≤ Emp ₂₀₀₅ < 40)	-0.006 (0.008)	-0.006 (0.005)	0.000 (0.005)	-0.003 (0.004)	0.003 (0.004)	0.349 (0.224)	-0.027 (0.200)
<i>DiD: Year and Firm FEs</i>							
Smaller Control Firms (10 ≤ Emp ₂₀₀₅ < 20)	-0.004 (0.005)	-0.000 (0.003)	-0.004 (0.004)	-0.005* (0.003)	0.001 (0.003)		
Larger Control Firms (30 ≤ Emp ₂₀₀₅ < 40)	0.002 (0.007)	-0.004 (0.005)	0.006 (0.005)	-0.002 (0.004)	0.005 (0.004)		
<i>DiD: Industry-Year and Firm FEs</i>							
Smaller Control Firms (10 ≤ Emp ₂₀₀₅ < 20)	-0.004 (0.005)	-0.000 (0.003)	-0.004 (0.004)	-0.005* (0.003)	0.001 (0.003)		
Larger Control Firms (30 ≤ Emp ₂₀₀₅ < 40)	0.001 (0.007)	-0.004 (0.005)	0.005 (0.005)	-0.002 (0.004)	0.005 (0.004)		
2007 Average (Treated Firms):	0.244	0.078	0.166	0.062	0.082	-0.236	-0.128
2007 Average (Smaller Control Firms):	0.240	0.070	0.170	0.057	0.074	-0.001	0.157
2007 Average (Larger Control Firms):	0.237	0.074	0.163	0.058	0.081	-0.114	-0.220
N, Firm-Years (Treated Firms):	15,074	15,074	15,074	14,795	14,624	353	399
N, Firm-Years (Smaller Control Firms):	46,035	46,035	46,035	44,453	43,451	569	610
N, Firm-Years (Larger Control Firms):	7,003	7,003	7,003	6,929	6,876	220	242

Note: The table reports DiD effects of the 2008 reform, which affected firms with 20 to 29 employees. We report estimates relative to two separate control groups of firms with employment of 10 to 19 and 30 to 39 employees, respectively, in 2005. The treatment group is defined as firms with 2005 employment of 20 to 29 employees. All point estimates are reported relative to 2007, the year for which we normalize the difference between treatment and the relevant control group to zero. Treatment indicates the DiD treatment effect in the post-reform period from 2008 to 2013. We report estimates using either smaller or larger firms as the comparison group. The first panel reports DiD results without additional control variables, the second panel includes industry-year effects (NACE Level 1), the third and fourth panel repeat the same specifications including firm effects. Standard errors clustered at the firm level are reported in parentheses. We plot some outcomes in Figures 8 and the remaining ones in Figure A.9. Since the last round of Quality of Work Life Survey prior to the reform was conducted at 2003, for Job Quality and Labor Relations Quality, the “2007 Average” corresponds to the 2003 wave; the post-period for the survey draws on the 2013 wave. * p<0.1; ** p<0.05; *** p<0.01.

Table A.12: Effects on Measures of Firm Performance, 2008 Reform

	Mean Log Wage (1)	AKM Pay Premium (2)	Labor Share (3)	Firm Survival (4)	Log Value Added per Worker (5)	Capital Intensity (6)	Total Factor Productivity (7)	Profit Margin (8)
<i>DiD: Year FEs</i>								
Smaller Control Firms (10 ≤ Emp ₂₀₀₅ < 20)	0.011 (0.008)	-0.002 (0.005)	0.002 (0.005)	0.004 (0.006)	0.012 (0.014)	0.040 (0.032)	-0.030 (0.022)	-0.003 (0.005)
Larger Control Firms (30 ≤ Emp ₂₀₀₅ < 40)	-0.004 (0.011)	-0.010 (0.007)	-0.002 (0.008)	0.002 (0.010)	0.040* (0.021)	0.030 (0.051)	0.002 (0.035)	-0.002 (0.007)
<i>DiD: Industry-Year FEs</i>								
Smaller Control Firms (10 ≤ Emp ₂₀₀₅ < 20)	0.012 (0.008)	-0.001 (0.005)	0.002 (0.005)	0.003 (0.006)	0.010 (0.014)	0.026 (0.030)	-0.012 (0.019)	-0.002 (0.005)
Larger Control Firms (30 ≤ Emp ₂₀₀₅ < 40)	-0.005 (0.010)	-0.009 (0.007)	-0.003 (0.008)	0.001 (0.010)	0.027 (0.021)	0.010 (0.049)	0.003 (0.031)	-0.003 (0.007)
<i>DiD: Year and Firm FEs</i>								
Smaller Control Firms (10 ≤ Emp ₂₀₀₅ < 20)	0.012* (0.007)	-0.003 (0.005)	0.004 (0.005)	0.004 (0.006)	-0.002 (0.012)	-0.025 (0.023)	0.009 (0.015)	-0.005 (0.005)
Larger Control Firms (30 ≤ Emp ₂₀₀₅ < 40)	0.001 (0.010)	-0.010 (0.006)	0.005 (0.007)	0.002 (0.010)	0.008 (0.017)	-0.033 (0.037)	0.018 (0.023)	-0.005 (0.007)
<i>DiD: Industry-Year and Firm FEs</i>								
Smaller Control Firms (10 ≤ Emp ₂₀₀₅ < 20)	0.013* (0.007)	-0.004 (0.005)	0.003 (0.005)	0.003 (0.006)	0.003 (0.012)	-0.026 (0.023)	0.014 (0.015)	-0.004 (0.005)
Larger Control Firms (30 ≤ Emp ₂₀₀₅ < 40)	0.001 (0.010)	-0.009 (0.007)	0.004 (0.007)	0.001 (0.010)	0.002 (0.017)	-0.034 (0.037)	0.014 (0.023)	-0.006 (0.007)
2007 Average (Treated Firms):	9.889	0.005	0.716	0.947	10.627	9.526	6.558	0.017
2007 Average (Smaller Control Firms):	9.838	-0.013	0.708	0.944	10.595	9.437	6.570	0.026
2007 Average (Larger Control Firms):	9.927	0.014	0.711	0.946	10.709	9.641	6.556	0.016
N, Firm-Years (Treated Firms):	15,254	14,048	12,605	18,536	12,176	12,365	11,836	12,307
N, Firm-Years (Smaller Control Firms):	46,607	42,191	38,112	57,190	36,848	37,254	35,883	37,327
N, Firm-Years (Larger Control Firms):	7,048	6,458	5,717	8,568	5,542	5,622	5,384	5,580

Note: The table reports DiD effects of the 2008 reform, which affected firms with 20 to 29 employees. We report estimates relative to two separate control groups of firms with employment of 10 to 19 and 30 to 39 employees, respectively, in 2005. The treatment group is defined as firms with 2005 employment of 20 to 29 employees. All point estimates are reported relative to 2007, the year for which we normalize the difference between treatment and the relevant control group to zero. Treatment indicates the DiD treatment effect in the post-reform period from 2008 to 2013. We report estimates using either smaller or larger firms as the comparison group. The first panel reports DiD results without additional control variables, the second panel includes industry-year effects (NACE Level 1), the third and fourth panel repeat the same specifications including firm effects. Standard errors clustered at the firm level are reported in parentheses. We plot some outcomes in Figures 8 and the remaining ones in Figure A.9 * p<0.1; ** p<0.05; *** p<0.01.

C Regression Discontinuity Design

As a complement to the difference-in-differences design studying the 1991 reform, we implement a more local regression discontinuity design comparing firms above and below the 150-employee threshold over a longer horizon of 25 years, from the introduction of the policy in 1991 to the end of our data in 2016. While we do not provide a detailed interpretation due to the *a priori* caveats noted in Footnote 19, the estimates broadly support the limited and small effects documented in the DiD design (and we can here additionally measure capital investment and dividends).

RD Specification Our regression model for the RD design is:

$$y_{it} = \alpha + \beta_1 \underbrace{1[N_{it-1} \geq 150]}_{\text{Worker Rep.}} + \beta_2(N_{it-1} - 150) + \beta_3 1[N_{it-1} \geq 150](N_{it-1} - 150) + v_{t,J(i)} + \epsilon_{it}, \quad (\text{A.1})$$

where y_{it} denotes the outcome of firm i in year t . The running variable N_{it-1} is the employment concept relevant to the codetermination law, counting all employees with more than 90 days of employment and positive earnings in a given year; we do not count short temporary job contracts. The RD design uses the same employment definition as the main analysis, namely a snapshot definition for December 31st of a given (previous) year, the best approximation to the employment concept that triggers codetermination in the subsequent year. Hence, we match the outcomes variables of a given year to the employment number of the previous year. In addition to this linear specification, we also report results from a quadratic one.

Importantly, there are no other policy discontinuities, such as tax incentives or administrative burdens, that kick in at the 150 employee threshold. The coefficient of interest is β_1 and captures the effect of the right to worker representation. To increase precision, our specification also includes industry-year effects, $v_{t,J(i)}$. Finally, we winsorize all continuous outcomes y_{it} at the 1% level.

Tax and Accounting Data from Finnish Tax Administration (1994 to 2016) We merge on firm-level tax and accounting data from the Finnish Tax Administration (Ministry of Finance, 2021), which covers all firms from 1994 to 2016. This data set contains the additional variables (investment and dividends), which we use in our RD analysis, but not available in our DiD sample period, as discussed in Section 5.

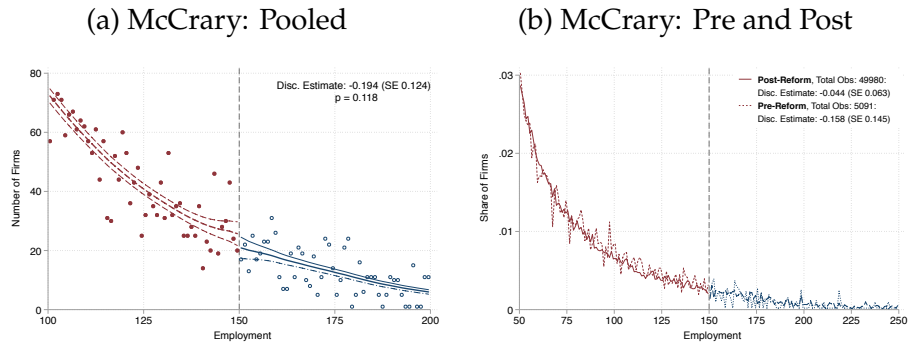
Bandwidth Choice and Inference Our main specification uses the bandwidth choice procedure in Calonico, Cattaneo, and Titiunik (2014), CCT in the following, with a triangular kernel. We cluster standard errors at the firm level.

McCrary Test We implement a McCrary (2008) test for discontinuity of the density of firms at the 150 employee threshold and plot the density in Figure A.10. The corresponding McCrary (2008) test does not reject continuity of the density at 150 employees ($p = 0.118$), among

observations of the post-reform period (1991-1997, we find $p = 0.485$ when considering the maximum post-reform horizon to 2016 to maximize observations and power). As we discuss in Section 5, the absence of bunching to the left of the 150 threshold is already a substantial result, as it shows that firms do not manipulate their size to avoid the worker right to voice.

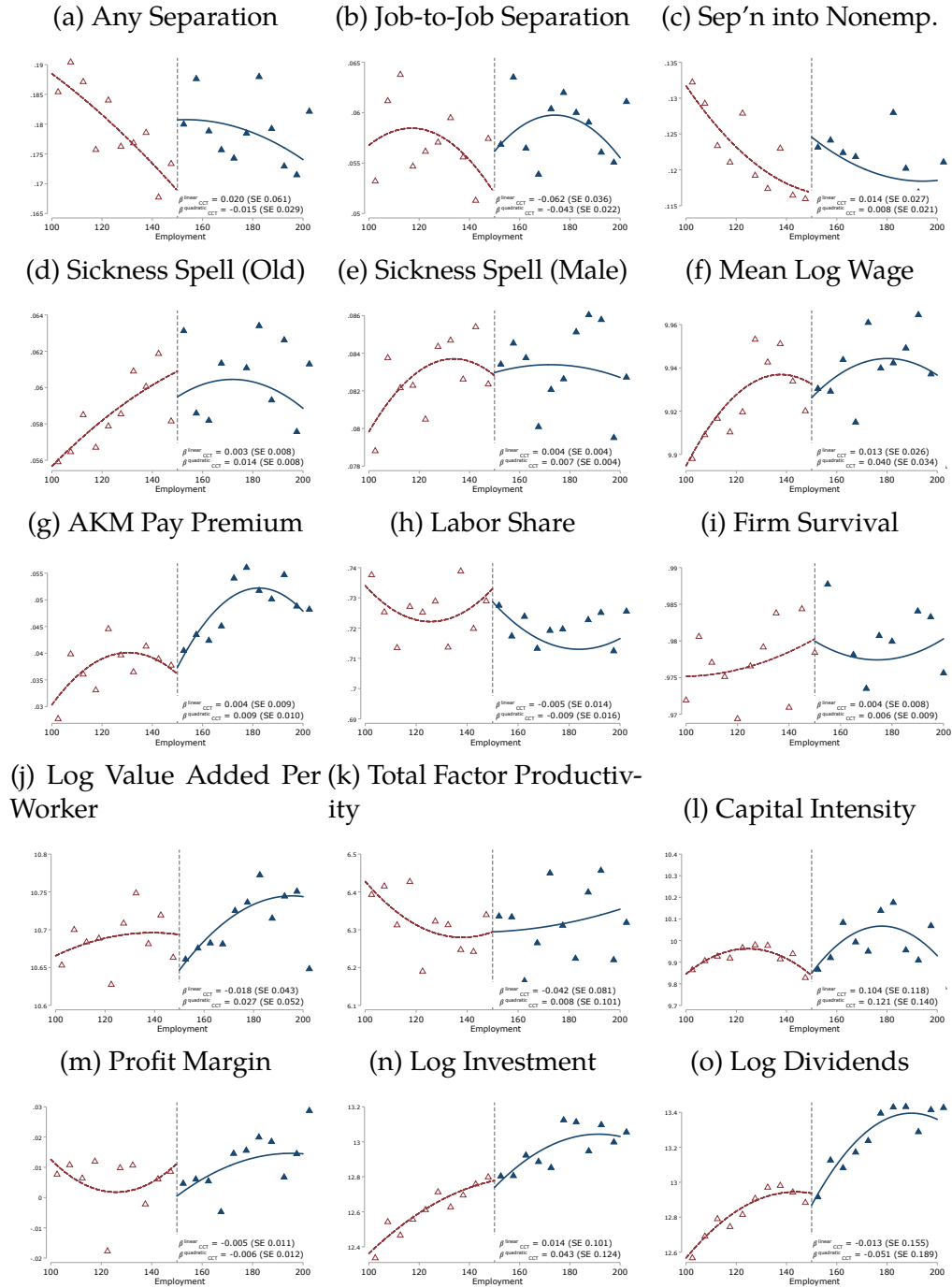
Graphic Illustration We visualize the data and research design using quadratic specifications and binned scatter plots. For consistency across graphs, we plot the same bandwidth of 50 employees around the threshold. As in our regression specifications, we use a triangular kernel around the policy discontinuity for weighting. We report the $\hat{\beta}_1$ and its standard error from our regressions in the figures as well. These are overall quantitatively very similar. Potential differences between the RD effect visualized in the figure and the preferred regression specification arise from (i) differences in bandwidth (optimal CCT bandwidth vs. fixed), (ii) inclusion of industry and year effects, and (iii) the CCT bias-correction in the regressions.

Figure A.10: Density of Firm Size and McCrary Tests



Note: The figure reports density plots and results of [McCrary \(2008\)](#) tests for continuity of the density at policy discontinuity of 150 employees. Panel (a) reports results for the pooled sample period from 1991 to 1997. Panel (b) reports the results separately for the pre-reform period, 1988-1990 (dashed line) and the post-reform period, 1991-2016 (solid line).

Figure A.11: Regression Discontinuity Design



Note: The figure presents RD estimates based on the employment threshold of 150. Potential differences between the RD effect visualized in the figure and the preferred regression specification arise from (i) differences in bandwidth (optimal CCT bandwidth vs. fixed), (ii) inclusion of industry-year effects, and (iii) the CCT bias-correction in the regressions.

D Data Appendix: Variable Construction

D.1 Constructing a Revealed-Preference Index of Firm Value

We study a revealed-preference measure of job quality that uses the full information on the quantity and direction of job-to-job transitions. Specifically, we draw on the PageRank algorithm, extended by Sorkin (2018) to provide a revealed-preference ranking of US employers. We provide a summary of our implementation here.

D.1.1 The Sorkin (2018) Procedure

Let F be the set of firms in our firm ranking analysis. The procedure uses worker flows from employer g to employer f , denoted M_{fg} , to estimate relative job values and to assign a common value V_f to each employer $f \in F$. In the underlying decision model, in the spirit of an on-the-job search model, employed workers receive up to one outside offer each period. Let λ_f denote the probability workers receive an offer from firm f . After receiving an offer, workers choose whether to accept by comparing firm common values and independently drawn idiosyncratic utility shocks associated with staying and leaving. Specifically, incumbent employees receive a value of $V_g + v_1$ from their current employer g , and a value of $V_f + v_2$ from accepting a potential offer from an employer f . In this discrete choice setting, the number of workers switching from employer g to f is then given by

$$M_{fg} = \lambda_f N_g \Pr(\text{Accept} | \text{Offer}), \quad (\text{A.2})$$

where N_g is the number of workers employed at firm g . Under the assumption that utility shocks are drawn from a type I extreme value distribution, $\Pr(\text{Accept} | \text{Offer}) = \frac{\exp V_f}{\exp V_f + \exp V_g}$. Assuming in addition that the ratio of offers to firm size λ_f / N_f is constant across firms, Equation (A.2) yields the following relationship between firm common values:

$$\begin{aligned} \frac{M_{fg}}{M_{gf}} &= \frac{\lambda_f N_g \exp V_f}{\lambda_g N_f \exp V_g} \\ \frac{M_{fg}}{M_{gf}} &= \frac{\exp V_f}{\exp V_g} \\ \frac{\sum_{g \in F} M_{fg} \exp V_g}{\sum_{g \in F} M_{gf}} &= \exp V_f \quad \forall f \in F. \end{aligned} \quad (\text{A.3})$$

Intuitively, a firm's value is a weighted average of the values of the firms it hires from, where weights are given by the size of hiring flows relative to total exit out of the firm. We estimate firm values from the linear system these equations define using a power iteration algorithm, detailed below.

This stylized framework assumes that all job-to-job transitions are informative about

workers' preferences and that firms extend offers at rates proportional to their size. Sorkin (2018) uses a richer model to relax these assumptions. In particular, he accounts for the fact that some separations are exogenous (e.g. resulting from layoffs) by down-weighting separations at contracting firms, while also allowing offer intensities to differ across employers. We adopt the more parsimonious approach, since Sorkin finds that three-quarters of job-to-job separations are endogenous, and relaxing the assumptions above does not qualitatively change his main findings.

Since information on firm values come from relative worker flows, the identification condition for this estimation procedure is that firms be strongly connected. (To be part of a strongly connected set, a firm must hire at least one worker from, and lose at least one worker to, other firms in the strongly connected set.) We estimate the values V_f separately in the windows before and after the introduction of the law (1988-1990, 1992-1997 respectively) in the largest strongly connected set of firms in each window.

D.1.2 Defining Employer-to-Employer (EE) Transitions for the Sorkin (2018) Procedure

For this exercise, we take the following steps to define EE transitions (which deviate from our main definition of job-to-job transitions by maximizing the use of transitions on the spell level rather than annual perspectives). Following Sorkin (2018), we drop any firm whose median number of yearly non-singleton employees is below 10. Here, a non-singleton employee is one who appears at least twice within the period of the analysis.

One of the key assumptions of the methodology proposed by Sorkin (2018) is that the moves used to estimate the firm ranking should be driven by employees' preferences. That is, we need to identify worker-initiated EE transitions, at least up to a large and homogeneous proportion among moves across firms. One of our challenges lies with the structure of the dataset prior to 1995. Before 1995, our matched employer-employee dataset only recorded start date and end date, employer ID and employee ID of spells, together with an aggregated annual income of an employee. Thus, we cannot use wage-based strategies such as the one used in Sorkin (2018) to determine the dominant employer at a given period for an employee when spells overlap. To overcome this challenge, we posit that the longer a spell is, the more likely the employer is a dominant one to a given employee. Based on this assumption, we use the following rule to determine dominant employers.

- Spells shorter than 3 months are not regarded as dominant.
- When there are spells that are completely contained or almost completely contained (start no earlier than 30 days before or end no more than 30 days after) by other spells, the one with the longest duration is the dominant one.

Hence, an EE transition occurs when a worker ends a dominant spell and begins a dominant spell at a different employer within plus or minus 30 days (has a gap or an overlap of no more

than 30 days).

D.1.3 Computational Details

Strongly Connected Sets To find firms in strongly connected sets, we start by retaining all firms with both inflow and outflows. Following Sorkin (2018), we use Tarjan’s algorithm to identify the largest strongly connected sets in the pre- and post-periods. We then estimate firm values for the firms within these sets, separately in the pre- and post-periods.

Solving for Firm Values Due to the high-dimensional linear system of Equations (A.3), we follow Sorkin (2018) and use the power iteration algorithm to approximate the solution, stopping when the difference in norms of $\exp \vec{V}$ between two adjacent iterations is smaller than 0.001.

Transformation of Firm Ranking Index The estimated Page Ranks have a clear interpretation based on the on-the-job search model. In particular, the raw indices corresponds to the exponential of the firm value. In Table 1, we report DiD estimates for the effects on the estimated firm values, $\hat{V}_f$. To better interpret effect sizes, we transform firm values into a z-score, using the mean and standard deviation of the pre-period index. We perform this standardization using the pre-period distribution in both periods to avoid masking treatment effects. We also report the DiD estimates using the raw index $\exp(\widehat{V}_f)$ as an outcome in Columns (3) and (4) of Table A.13.

Sample Selection Since the estimable set of firm values before and after the introduction of the law do not perfectly overlap, we restrict our sample to firms belonging to the intersection of both sets for the result reported in Table 1. In this section, we additionally report the estimates of firm ranking value for the union of the two strongest connected sets in the pre- and post-period, in Column (2) and Column (4) of Table A.13.

Table A.13: Effects on Firm Ranking Index

	Firm Value Log Index z-score (Intersection) (1)	Firm Value Log Index z-score (Union) (2)	Firm Value Index z-score (Intersection) (3)	Firm Value Index z-score (Union) (4)
<i>DiD: Year FEs</i>				
Treatment (1991-1997)	-0.043 (0.105)	-0.055 (0.093)	-0.013 (0.087)	0.004 (0.064)
<i>DiD: Industry-Year FEs</i>				
Treatment (1991-1997)	-0.049 (0.104)	-0.072 (0.092)	0.021 (0.085)	0.019 (0.063)
<i>DiD: Year and Firm FEs</i>				
Treatment (1991-1997)	-0.053 (0.107)	-0.056 (0.100)	-0.017 (0.084)	0.015 (0.067)
<i>DiD: Industry-Year and Firm FEs</i>				
Treatment (1991-1997)	-0.065 (0.104)	-0.068 (0.098)	0.014 (0.082)	0.041 (0.067)
1990 Average (Control):	-0.008	0.014	0.000	0.006
1990 Average (Treated):	0.045	0.138	0.009	0.076
N, Firm-Years (Control):	4,402	4,584	4,403	4,585
N, Firm-Years (Treated):	1,409	1,416	1,409	1,416

Note: The table reports results of DiD specifications as in Equation (1). Column (1) uses the logarithm of the raw index as an outcome, and reports the effects for the intersection sample of firms between pre- and post-period strongest connected sets. Results of this column are also reported in Table A.11 Column (4). Instead of the intersection set of firms, Column (2) uses the union of the two sets of firms. Column (3) and Column (4) report effects using the raw index in the intersection and union sets of firms, respectively, as outcome variables. * p<0.1; ** p<0.05; *** p<0.01.

D.2 Quality of Work Life Survey

For our analysis of the 1991 law, we draw on the 1990 and 1997 waves of the Finnish Quality of Work Life Survey, merged with the administrative firm-level data, to assess effects of the law on subjective measures of labor relations and job quality. (For our analysis of the 2007 reform, we draw on the waves in 2003 and 2013, where we skip the 2008 wave, which is ambiguously timed as the 2007 reform became active in 2008.)

We construct measures of job quality and of the quality of labor relations using principal component analysis. After selecting a set of variables (listed below) for a specific measure, we transform each variable into a z-score and apply principal component analysis, extracting the first principal component using the regression method (see Appendix Table A.14). We then normalize the extracted factor into a z-score using the post-reform mean and standard deviation of firms in our sample without a worker voice right in 1997 (i.e., firms with fewer than 150 employees) and normalize it such that higher values indicate higher worker voice, job quality, or quality of labor relations.

Survey Items for Construction of Job Quality Index We select the following variables, measured on Likert scales or as indicator variables and available in both waves we consider (two per reform), for our construction of our job quality index:

1. It is hard to focus on home due to issues at work.
2. Do you have a fair wage compared to other jobs?
3. Do you feel unwilling or mentally tired to go to work?

4. Have you had a work related accident during past 12 months?
5. How boring is your job?
6. How physically demanding is your job?
7. How mentally demanding is your job?
8. How demanding the pace of work in your job?
9. Tasks are well organized at our firm.
10. There are too few employees in our firm for the tasks.
11. There is an open atmosphere and team spirit in our firm.
12. My supervisor supports and encourages me.
13. My supervisor inspires me.
14. Negative working conditions (17 sub-items).
15. Uncertainty related to: transfer to other tasks.
16. Uncertainty related to: furloughs.
17. Uncertainty related to: layoffs.
18. Uncertainty related to: unemployment.
19. Uncertainty related to: disability.
20. Opportunities to develop skills.
21. Importance of wage vs. content of work.

Survey Items for Construction of Labor Relations Index We select the following variables, measured on Likert scales or as indicator variables and available in all three waves we consider, for our construction of our labor relations index:

1. Do you belong to a labor union?
2. Conflicts between managers and employees in your working unit
3. Conflicts between employees in your working unit
4. Conflicts between between different employee groups in your working unit
5. My supervisor supports and encourages me.
6. My supervisor actively interacts with employees.
7. My supervisor openly informs employees about all decisions.
8. My supervisor trusts the employees.
9. When do you usually receive information about changes in your work tasks? (1 = Already at the planning stage; 2 = Just before the actual change; 3 = When the change has been decided or after).
10. There is an open atmosphere and team spirit in our firm.

Table A.14: Results of Principal Component Analysis for Construction of Indices of Labor Relations and of Job Quality

Labor relations	Eigenvalue	Difference	Proportion	Cumulative	Factor1	Uniqueness
Labor union	3.01031	2.21166	0.9443	0.9443	0.1645	0.9729
Unit contradictions: manager	0.79865	0.70974	0.2505	1.1948	0.6051	0.6339
Unit contradictions: employee	0.08891	0.08972	0.0279	1.2227	0.4169	0.8262
Unit contradictions: between managers and employees	-0.00081	0.02710	-0.0003	1.2224	0.3581	0.8717
Quality of manager	-0.02791	0.03873	-0.0088	1.2137	0.6836	0.5328
Manager interacts with staff	-0.06664	0.02074	-0.0209	1.1928	0.6599	0.5646
Manager informs staff	-0.08738	0.04938	-0.0274	1.1653	0.6904	0.5233
Manager trusts staff	-0.13676	0.04181	-0.0429	1.1225	0.6433	0.5862
Changes in tasks are informed	-0.17857	0.03323	-0.0560	1.0664	0.3989	0.8409
Firm openness	-0.21181	.	-0.0664	1.0000	0.6023	0.6373
Number of obs. = 6,917						
LR test: independent vs. saturated: $\chi^2(55) = 1.8e+04$ $p = 0.0000$						
Factor loadings (pattern matrix) and unique variances						
Work quality	Eigenvalue	Difference	Proportion	Cumulative	Factor1	Uniqueness
Wage is fair	2.91041	1.40607	0.5593	0.5593	0.2213	0.9510
Hard to focus at work	1.50435	0.43367	0.2891	0.8484	0.0742	0.9945
Tired to go to work	1.07068	0.30591	0.2058	1.0542	0.3714	0.8621
Accidents	0.76477	0.42756	0.1470	1.2011	0.0955	0.9909
Work feels boring	0.33721	0.21052	0.0648	1.2659	0.3244	0.8947
Work requires physical effort	0.12669	0.06961	0.0243	1.2903	0.2868	0.9177
Work requires mental effort	0.05708	0.03910	0.0110	1.3013	0.1094	0.9880
Work pace	0.01798	0.03087	0.0035	1.3047	0.2892	0.9164
Firm quality	-0.01290	0.01239	-0.0025	1.3022	0.4617	0.7869
Firm has too few labour	-0.02528	0.02030	-0.0049	1.2974	0.1897	0.9640
Firm openness	-0.04558	0.02620	-0.0088	1.2886	0.4647	0.7840
Manager quality	-0.07179	0.01822	-0.0138	1.2748	0.6127	0.6246
Manager inspires staff	-0.09001	0.01718	-0.0173	1.2575	0.6290	0.6044
Work conditions, negative	-0.10719	0.03499	-0.0206	1.2369	0.2982	0.9111
Work uncertainty: tasks	-0.14218	0.00707	-0.0273	1.2096	0.2656	0.9294
Work uncertainty: furloughs	-0.14925	0.01653	-0.0287	1.1809	0.4172	0.8259
Work uncertainty: lay-offs	-0.16577	0.00809	-0.0319	1.1491	0.4692	0.7798
Work uncertainty: unemployment	-0.17387	0.00761	-0.0334	1.1157	0.4978	0.7522
Work uncertainty: disability	-0.18148	0.02282	-0.0349	1.0808	0.3088	0.9047
Opportunity of education	-0.20430	0.01173	-0.0393	1.0415	0.4631	0.7855
Wage corresponds to content of work	-0.21602	.	-0.0415	1.000	0.2799	0.9216
Number of obs. = 6,527						
LR test: independent vs. saturated: $\chi^2(210) = 2.6e+04$ $p = 0.0000$						
Factor loadings (pattern matrix) and unique variances						

Note: The table reports results of the principal component analysis (PCA). The first panel shows the PCA for the labor relations index. The second panel shows the PCA for the job quality index. See Appendix [D.2](#) for more details on the individual survey items. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

D.3 Survey and Interviews of Employee Representatives

Our 2020 Survey The survey of employee representatives was developed and carried out in co-operation with the Industry Employees Association (Teollisuuden Palkansaajat or TP) and TP's co-operation group in September-October 2020. The Industry Employees TP is active in organizing training and education for firm-level employee representatives about their role and rights. Hence, the TP maintains a detailed list of the contact information of various employee representatives working in firms in different industries. As the TP does not have a separate list of worker representatives on boards or advisory councils, different types of employee representatives are mixed together in the list of contacts, including shop stewards as well as representatives of the European Works Councils (EWC). The contact list includes names, emails, and phone numbers of approximately 550 representatives.

We, in collaboration with TP, designed and developed a survey questionnaire and sent it out via email to these employee representatives. A total of 111 respondents participated in the survey, and thus the survey response rate was approximately 20%. Table [A.15](#) below collects some descriptive statistics of the survey. Employee representatives who responded to the survey worked in very large companies, as the respondents estimated the firm to have an

Table A.15: Survey Descriptives

	Mean	SD
Number of Employees	4833	7886
Male	0.68	0.49
Age in Years	No. obs	
20-35	4	
36-45	18	
46-55	41	
>55	48	
Total	111	
Years Working in the Firm	No. obs	
0-5	2	
6-10	12	
11-15	18	
>15	79	
Total	111	

average of about 4,800 employees, but the dispersion in company size was very large, varying from 75 to 50,000 employees. Approximately 70% of the respondents were men and 80% were older than 45 years. A large share of respondents had worked for the firm the same firm for a long time—71% of the respondents for more than 15 years.

Furthermore, 30 of the respondents acted as worker representatives on boards or advisory councils in firms, the others were mainly shop stewards (43) and EWC representatives (22). The remaining respondents were either occupational health and safety representatives or represented staff in another role in the firm's institutions (16). The majority of all respondents, about 66%, worked in manufacturing firms. Two-thirds of the administrative representatives had served in their role more than three years and many of them also served as shop stewards (24) and EWC representatives (20). In addition, there was a large of variation also by union status: a larger share of the respondents were from the Trade Union Pro (27%), followed by the Confederation of Finnish Industry (18%) and the Association of Engineers (12%). 9% of the respondents were members of the Service Sector Trade Union and 7% were members of the Paper Association. The remaining respondents were evenly distributed among the various unions.

Existing Surveys In Appendix Table [A.1](#), we also draw on results from existing surveys: one of 203 shop-floor representatives from the Finnish metalworks union, described in [Sairo \(2001\)](#), and two conducted in 2017 and 2019 by the Industry Employees TP Association, described in [Teollisuuden Palkansaajat \(2019\)](#). The latter surveys covered 288 and 164 firms with more than 150 employees, respectively, and surveyed worker representatives of various kinds. See the cited summary papers for further details.

Interviews We conducted five in depth interviews in June 2020 to learn about how the worker representation institution operates and is organized in different firms. We used the above-described list of employee representatives to contact them (via email) and asked if they would be willing to be interviewed on their role as a worker representative. We received 11 volunteers from whom we selected five, to represent different types of firms by size and industries. For these five representatives, we conducted in-depth interviews lasting approximately 30–60 minutes, in which we followed the structure of questions described below.

A broad interview structure:

- Background questions:
 - What is your history in the company? In which governing body do you work and how often do you meet?
 - How were you selected as an administrative representative?
- Do you feel that you can influence the company's operations?
- How do others in the management group see your role?
- What challenges do you face in influencing and participating in decision-making?
- Where have you succeeded in, for example, investments in employee training or well-being at work?
- Do you feel that you have been able to influence the company's layoffs or redundancies?
- Do you feel that this joint role as both as an employee representative and as an administrative representative strengthens your role in the company?
- Do you feel that the management group sees such a joint role negatively?
- Do you feel that you can influence investment decisions?
- What about decisions regarding levels of pay, do you feel you can influence these discussions?
- What is a typical management group meeting like?
- Do you feel that as an administrative representative you have succeeded in improving employee conditions?
- When it comes to influencing changes, do you think the formal management group is more important than informal relationships?
- If your company is, for example, considering outsourcing a service to another country, do you see that you could influence such a decision or participate in the discussion?
- If your company was considering layoffs, do you feel that you could influence such a decision or participate in the discussion?
- What else would you like to say about your role or what important points have we missed that could help us better understand the role of employee representation in company decision making?

D.4 Executive Compensation

We describe how we identify executives, and our two measures of compensation of executives: earnings and total income (earned and capital income).

Earnings Earnings include all wages, fringe benefits and other work-related compensation (as our main wage variable described in Section 3).

Earnings and Capital Income For our second income measure, we use annual total earnings and capital income for each individual, where earned income includes all wage income, benefits and pension income, and capital income contains dividend, entrepreneurial, rental and interest income, among others.

Identifying Executives We use individual-level occupation codes in the employee-employer data (3-digit) to identify chief executives and managing directors. When we observe two or more executives for a single firm in a year, we select the highest-paid executive based on the maximum total income measure (earned and capital income).

There are two caveats regarding the data. First, the occupation information is only available for a subset of years (1990, 1993, 1995, 2000 and 2004 onward). We address this issue by filling the data forward and backward when we observe the same individual being an executive in the same firm over time. We also fill data backward for years 1988 and 1989 and assume that executives in 1990 are also executives in earlier years. Second, due to institutional reasons, in some cases it could be that chief executives are not actually employed with the firm and are thus missing from the employee-employer data set. However, with our above definitions, the executive in our data matches to the highest paid employee in 91.2% of the firm-year pairs, suggesting that this approach provides a reasonable proxy for executive pay.

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