The Dynamics of Power in Labor Markets: Monopolistic Unions versus Monopsonistic Employers

Samuel Dodini, Kjell G. Salvanes, Alexander Willén (NHH)

Competing Interests

- Can union power counter-balance monopsony power in the labor market?

- Recent research has revealed a strong role of firm market power from concentration or frictions
  - Upward-sloping labor supply to the firm $\rightarrow$ wage markdowns below productivity

- Worker power (through unions) $\rightarrow$ monopolistic power over labor supply
  - Wage markups above what they would get otherwise

- We have been talking about it from Adam Smith (1776) to Freeman and Medoff (1984); causal evidence on these interactions is sparse

NHH

The Ambiguity:

- Ability of union to set wages depends on **both** union power & employer power
  - Monopsonistic market: more rents but weaker bargaining position
  - Competitive market: fewer rents but stronger bargaining position (leverage outside options)

- How effective are unions in counteracting monopsony power?

- How do union effects differ across competitive vs monopsonistic markets?
  - Are they ameliorating market imperfections or creating new ones?

- Wide-ranging implications for the individual worker, labor market policy, and the overall economy

NHH

This Paper

Use reforms to tax deduction for union dues in Norway as shock to unionization at the firm

- Measure the causal effects of union density at the firm on earnings in an entire country

- Measure the differential effects across levels of labor market concentration

- Investigate possible sources of rents (labor vs product side)

- Heterogeneous treatment effects by worker types

- Measure effects on employment and inequality in firms and local labor markets

NHH

Preview of Results

Earnings by labor market concentration by quintile of predicted union density
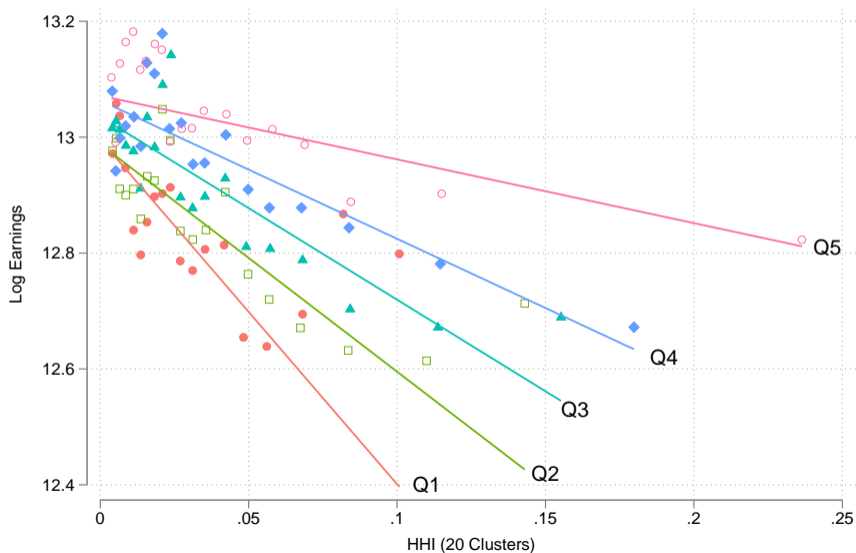
Contributions

- **Empirically bring together modern literatures on unions and monopsony**

- Rapidly-growing literature that measures labor market concentration and its impact on wages and employment

  - E.g., Schubert et al. (2020); Dodini et al. (2020); Caldwell and Danieli (2018); Azar et al. (2020b;a); Benmelech et al. (2018); Marinescu et al. (2019); Qiu and Sojourner (2019); Rinz (2018); Hershbein et al. (2018)

- Large literature that identifies the union wage effect

  - E.g., Fortin et al. (2022); DiNardo and Lee (2004); Lee and Mas (2012); Frandsen (2021); Sojourner et al. (2015); Card and De La Rica (2006); Bryson (2002); Barth et al. (2020)

NHH

Unions in Norway

- All workers have the right to unionize; collective bargaining required if 10 percent of workers request it

- Historical unionization rates 50-60%
  - 36% private; 79% public; 44% of men; 57% of women
  - Not as high as other Scandinavian neighbors (Sweden, Denmark ↓ membership in last 20 years)

- Commonly structured by professional area or sector; linked to national confederations

- We focus on *local* changes (≈ 70 % of total negotiated wage increases)

- Union dues are tax deductible up to a legislated maximum

NHH

Measures of Labor Market Concentration

Define Herfindahl-Hirschman Index (HHI) of employment in each local labor market (LLM)

## Skill Cluster Based Measures (Dodini et al., 2020)

- Use O*NET skills data crosswalked to Norwegian occupations in Hierarchical Clustering algorithm to group occupations (Acemoglu and Autor, 2011)
- HHI is based on skill "cluster" employment shares in local labor market
- Accounts for a worker's outside options based on skills they actually possess
- Estimate everything at 20, 40 clusters, rescale [0,1]
- Fixed at firm level at firm's first year in the data ($\overline{HHI}_f$)

Robustness: Occupation-Based Measures

- Define share of occupation employment, run entire analysis
- Direction & relative magnitudes all similar

NHH

Changes in Union Deduction, 2001-2015

- Union dues are tax deductible up to a legislated maximum

- Beginning in 2002, large increases in statutory maximum union deduction

- Nearly quadrupled in ten years

NHH
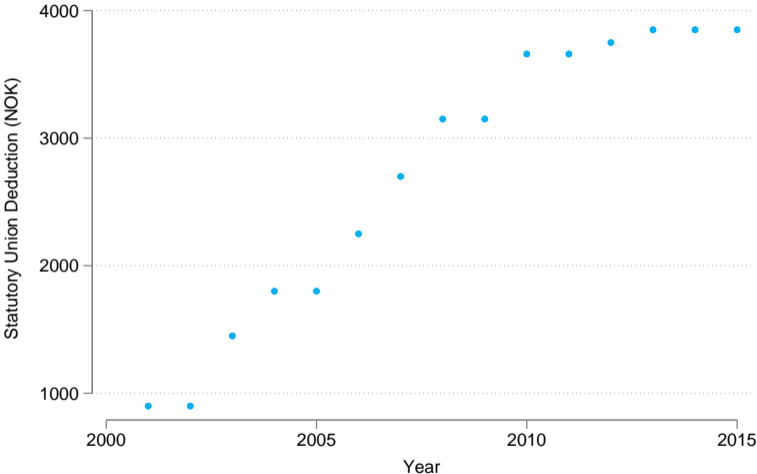
Exogenous Shifter of Unionization

- Estimate pr(union) as function of subsidy and union dues

- Impute union dues$\rightarrow$ mean(union dues) within occupation-industry-year cells

    - Infers counterfactual union dues for those not in union

    - Abstract away from *individual* determinants of union dues

- Fix firm average union dues ($\overline{D_f^0}$) at first year firm appears in data, inflation adjust

    - No endogeneity of setting dues in response to tax policy

$$S_{ft} = T_t * (min\{\overline{D_f^0}, MaxDeduction_t\})$$

Identifying Variation:

- Those bound by deduction cap more intensely treated over time
- Intensity of subsidy change based on firm industry x occupation mix at baseline

NHH

Shifts in Union Membership

For worker i in occupation o in industry c in firm f in year t, estimate:

$$Union_{iocft} = \beta_0 + \beta_1 S_{ft} + \beta_2 ND_{ft} + \beta_3 \overline{HHI}_f \tag{1}$$
$$+ \beta_4 \overline{HHI}_f * S_{ft} + \beta_5 \overline{HHI}_f * ND_{ft} + \delta_{Ed} + \pi_{Age} + \gamma_{oc} + \tau_t + \varepsilon_{iocft}$$

- $\overline{HHI}_f$ is mean firm concentration fixed at first year in data
- ND_{ft} is imputed net-of-subsidy union due $= \overline{D_f^0} - S_{ft}$
- δ = completed education FE (level & discipline); π_{Age} = age group FE
- γ = industry-occupation cell FE; τ = year FE
- β_1 gives effect of subsidy in non-concentrated markets
- β_4 shows any change in the effect of subsidy in concentrated markets

NHH

Effects of Union Density on Earnings

$$Log(Earnings)_{iocft} = \beta_0 + \beta_1 \widehat{UD}_{ft} + \beta_2 \widehat{UD}_{ft} * \overline{HHI}_f \qquad (2)$$
$$+ \delta_{Ed} + \pi_{Age} + \gamma_{oc} + \tau_t + \phi_f + \varepsilon_{iocft}$$

- $\widehat{UD}_{ft}$ here is mean of individual predicted pr(union) in each firm-year

- β_2 shows differential marginal effect of union density in fully concentrated markets accounting for individual & job characteristics

- ϕ_f holds constant time invariant characteristics of the firm

NHH

Responses to Base Subsidies

VARIABLES	(1) No HHI	(2) No HHI	(3) 20 Clusters	(4) 20 Clusters	(5) 40 Clusters	(6) 40 Clusters
Subsidy (1,000 NOK)	0.125**	0.151***	0.0926*	0.131***	0.0958*	0.135***
	(0.0517)	(0.0198)	(0.0527)	(0.0199)	(0.0528)	(0.0200)
HHI x Subsidy			0.171***	0.221***	0.109***	0.141***
			(0.0479)	(0.0294)	(0.0419)	(0.0263)
Observations	16,181,785	15,992,458	16,181,785	15,992,458	16,181,785	15,992,458
Individual FE	No	Yes	No	Yes	No	Yes
Avg Pr(Union)	0.597	0.597	0.597	0.597	0.597	0.597
Mean Base Subsidy 2001 (1,000)	0.252	0.252	0.252	0.252	0.252	0.252
Mean Base Subsidy 2014 (1,000)	1.022	1.022	1.022	1.022	1.022	1.022

Takeaways

- ↑ base subsidy by 1,000 NOK ↑ pr(union) ≈ 13-15 ppts
- Effect of base subsidies rises with concentration
- Holds even with individual FE

NHH

Earnings Effects by HHI

VARIABLES	Panel A: Full Sample		
	(1) No HHI	(2) 20 Clusters	(3) 40 Clusters
Predicted Firm Union Density	0.0181***	0.0114***	0.0107***
	(0.00219)	(0.00218)	(0.00221)
Predicted Firm Union Density * HHI		0.0141***	0.0185***
		(0.00301)	(0.00271)
Observations	16,181,780	16,181,780	16,181,780

	Panel B: Private Sector Only		
Predicted Firm Union Density	0.0105***	0.00512**	0.00482**
	(0.00207)	(0.00218)	(0.00216)
Predicted Firm Union Density * HHI		0.0431***	0.0298***
		(0.00540)	(0.00560)
Observations	11,009,362	11,009,362	11,009,362

NHH

Product/Industry vs Labor Concentration

VARIABLES	(1) No Labor HHI	(2) 20 Clusters	(3) 40 Clusters
Predicted Firm Union Density	0.0147*** (0.00256)	0.0132*** (0.00285)	0.0126*** (0.00279)
Predicted Firm Union Density * Labor HHI		0.0256*** (0.00815)	0.0106 (0.00752)
Predicted Firm Union Density * Industry Revenue HHI		0.0191*** (0.00664)	0.0176*** (0.00654)
Observations	7,634,149	7,634,149	7,634,149

Takeaways

- Labor rents and product rents are separately important
- Two separate rent buckets with different implications

NHH

Heterogeneous Effects - 1

VARIABLES	Above vs Below Firm-Occupation Median		
	(1) No HHI	(2) 20 Clusters	(3) 40 Clusters
Predicted Firm Union Density	0.00462**	-0.00150	-0.00239
	(0.00207)	(0.00199)	(0.00199)
Predicted Firm Union Density * HHI		0.0276***	0.0294***
		(0.00280)	(0.00249)
Union Density * Above Firm-Occ Median	0.00633***	0.00657***	0.00664***
	(4.02e-05)	(4.97e-05)	(5.03e-05)
Union Density * HHI * Above Firm-Occ Median		-0.00498***	-0.00550***
		(0.000332)	(0.000322)
Observations	16,181,780	16,181,780	16,181,780

Takeaways

- Above-median workers gain in non-concentrated markets
- Benefits accrue to below median workers as concentration increases

NHH

Effects on Employment (Next Year)

VARIABLES	(1) Pr(Hours>30)	(2) Pr(Hours>30)	(3) Workers	(4) Workers
Lagged Predicted Union Density	0.00817**	-0.0128***	0.0432	0.364
	(0.00330)	(0.00399)	(0.912)	(1.093)
Lagged Predicted Union Density * HHI		0.0419***		-0.788
		(0.00522)		(2.154)
Constant	0.308	1.435***	91.48*	74.23
	(0.190)	(0.227)	(52.00)	(62.07)
Observations	14,425,353	14,425,353	221,672	221,672

Takeaways

- Increase in employment on the intensive margin in concentrated markets; reduction in non-concentrated markets

- No strong effects on extensive margin [rigidity in Norwegian labor market?]

NHH

Inequality Within Local Labor Markets

VARIABLES	Local Labor Market Level Inequality		
	(1) LLM 90/10	(2) LLM 90/50	(3) LLM 50/10
Predicted Union Density	0.0339**	-0.0108	0.0319***
	(0.0156)	(0.00664)	(0.00880)
Predicted Union Density x HHI	-0.0509***	0.00160	-0.0313***
	(0.0112)	(0.00337)	(0.00709)
Dep Variable Mean	3.22	1.68	1.91
Pct Effect Union Density	1.05 %	-0.64 %	1.67 %
Pct Effect Union Density x HHI	-1.58 %	0.10 %	-1.64 %
Observations	2,396	2,396	2,396

Takeaways

- ↓ net effect of "within-" & "across-sector" inequality in concentrated markets
- Firm sorting blunts percent effect of within-firm changes

NHH

Policy Implications

- Unions may be addressing a market imperfection when there is a lack of competition

- Some evidence of inequality enhancing effect when markets are competitive

- Estimates based on a simple policy lever: a modest tax subsidy for union dues
  - Concentrated markets disproportionately benefit; though universal, well targeted in *effects*
  - Marginal union member likely to be in concentrated market $\implies$ overall $\downarrow$ in inequality
  - $\implies$ Norway's more condensed pre-tax income distribution compared to US

NHH

References I

Acemoglu, Daron, and David Autor. 2011. "Skills, Tasks and Technologies: Implications for Employment and Earnings." In *Handbook of Labor Economics*. 4: Elsevier, 1043–1171.

Azar, José, Ioana Marinescu, and Marshall Steinbaum. 2020a. "Labor Market Concentration." *Journal of Human Resources* 1218–9914R1.

Azar, José, Ioana Marinescu, Marshall Steinbaum, and Bledi Taska. 2020b. "Concentration in US labor Markets: Evidence from Online Vacancy Data." *Labour Economics*, 66, p. 101886.

Barth, Erling, Alex Bryson, and Harald Dale-Olsen. 2020. "Union Density Effects on Productivity and Wages." *The Economic Journal*, 130(631): 1898–1936.

Benmelech, Efraim, Nittai Bergman, and Hyunseob Kim. 2018. "Strong Employers and Weak Employees: How Does Employer Concentration Affect Wages?"Technical report, National Bureau of Economic Research.

Bryson, Alex. 2002. "The Union Membership Wage Premium: An Analysis Using Propensity Score Matching."

Caldwell, Sydnee, and Oren Danieli. 2018. "Outside Options in the Labor Market." *Unpublished manuscript*.

Card, David, and Sara De La Rica. 2006. "Firm-Level Contracting and the Structure of Wages in Spain." *ILR Review*, 59(4): 573–592.

DiNardo, John, and David S Lee. 2004. "Economic Impacts of New Unionization on Private Sector Employers: 1984–2001." *The Quarterly Journal of Economics*, 119(4): 1383–1441.

Dodini, Samuel, Michael F Lovenheim, Kjell G Salvanes, and Alexander Willén. 2020. "Monopsony, Skills, and Labor Market Concentration."

Fortin, Nicole, Thomas Lemieux, and Neil Lloyd. 2022. "Right-to-Work Laws, Unionization, and Wage Setting." *NBER working paper 30098*.

NHH

References II

Frandsen, Brigham R. 2021. "The Surprising Impacts of Unionization: Evidence from Matched Employer-Employee Data." *Journal of Labor Economics*, 39(4): 861–894.

Hershbein, Brad, Claudia Macaluso, and Chen Yeh. 2018. "Concentration in US Local Labor Markets: Evidence from Vacancy and Employment Data."Technical report, Working paper.

Lee, David S, and Alexandre Mas. 2012. "Long-Run Impacts of Unions on Firms: New Evidence from Financial Markets, 1961–1999." *The Quarterly Journal of Economics*, 127(1): 333–378.

Marinescu, Ioana Elena, Ivan Ouss, and Louis-Daniel Pape. 2019. "Wages, Hires, and Labor Market Concentration." *Available at SSRN 3453855*.

Qiu, Yue, and Aaron Sojourner. 2019. "Labor-Market Concentration and Labor Compensation." *Available at SSRN 3312197*.

Rinz, Kevin. 2018. "Labor Market Concentration, Earnings Inequality, and Earnings Mobility." *Center for Administrative Records Research and Applications Working Paper*, 10.

Schubert, Gregor, Anna Stansbury, and Bledi Taska. 2020. "Monopsony and Outside Options." *Available at SSRN*.

Sojourner, Aaron J, Brigham R Frandsen, Robert J Town, David C Grabowski, and Min M Chen. 2015. "Impacts of Unionization on Quality and Productivity: Regression Discontinuity Evidence from Nursing Homes." *ILR Review*, 68(4): 771–806.

NHH