

# Monetary Policy under Labor Market Power

Anastasia Burya<sup>1</sup>

Rui C. Mano<sup>2</sup>

Yannick Timmer<sup>3</sup>

Anke Weber<sup>2</sup>

<sup>1</sup>Columbia University

<sup>2</sup>International Monetary Fund

<sup>3</sup>Federal Reserve Board

September 16, 2022

The views expressed in these slides are those of the authors and do not necessarily reflect the views of the International Monetary Fund, its Executive Board or its Management nor the Federal Reserve Board or the Federal Reserve System.

# Introduction

- Recent economic expansions: Monetary easing failed to stimulate wage growth despite strong employment growth
- Flattening of the Wage Phillips Curve
- Labor market power is very elevated in the U.S.
  - *Wages  $\approx$  30% “marked down” below the marginal product of labor (Hershbein, Macaluso, Yeh; 2019)*
- **This paper:** implications of labor market power for monetary policy transmission

# Summary

- Labor Market Power strengthens the labor demand effects of monetary policy
  - The effect is stronger for non-skilled workers
  - But no effect on wage growth effects of monetary policy
    - High LMP firms' wages respond in the same way
- ⇒ Labor market power offers partial explanation for wageless recovery

# Intuition

- Results consistent with a search and matching model where hiring can be adjusted using two margins:
    - Higher wages attract more workers, and...
    - Posting **multiple** vacancies also attracts more workers
  - Labor Market Power:
    - More efficient matching, i.e. **vacancies are more visible** or
    - Lower **vacancy posting costs**
- ⇒ Adjust vacancies relative to wages disproportionately

## Model Sketch

- Firms hire by posting wages and **multiple vacancies**, represented by hiring function  $h(w, v)$ , for simplicity assume hiring happens every period
- FOC for the firm:


$$\begin{array}{ccc} \text{MB hiring through vacancies} & & \text{MB hiring through wages} \\ \underbrace{\frac{MPL \times h'_v}{c}} & = & \underbrace{\frac{MPL \times h'_w}{h}} \\ \text{MC posting vacancies} & & \text{MC raising wages} \end{array} \quad (1)$$

- Labor market power: (i) lower costs of posting vacancies ( $c$ ) or (ii) better visibility (larger  $h'_v$ )
- MP easing shock  $\Rightarrow$  Labor market power amplifies the response of vacancies and hiring **without** a disproportional increase in wages

- **Burning Glass Technology**

- Near universe of online vacancy postings:  $\approx$  250 million vacancies from over 45,000 websites, over  $\approx$  10 years
- 70% of all U.S. online vacancies
- Industry and occupation IDs
- Job requirements (e.g. education, skills)
- Geographical breakdown, establishment level data
- Posted wages

- **Monetary Policy shocks** using *Jarocinski and Karadi (2020)*.

This paper: focuses on MP shocks but controls for information component 

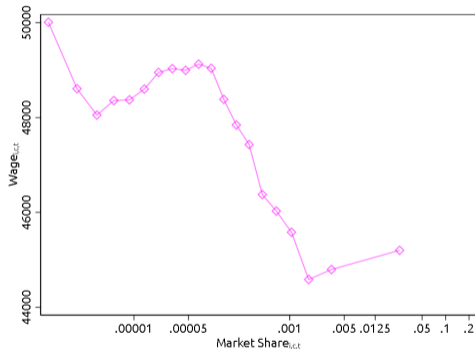
## Definition: Labor market power

- Cournot competition model of Berger, Herkenhoff and Mongey (2022):  
Share of total payroll of each firm
  - In the spirit of Atkeson and Burstein (2008)
- **Vacancy Share:** Share of vacancies posted by a single firm in a local labor market
- We define a labor market as a U.S. census commuting zone
- Use cumulative share to allow for inclusion of smaller firms

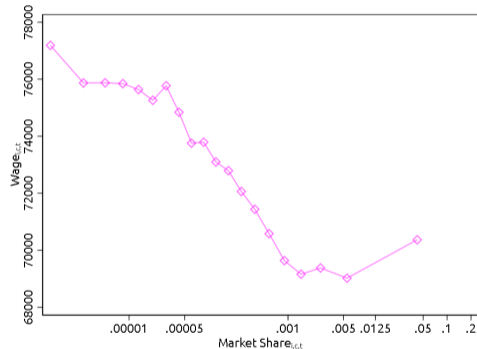
$$\text{Vacancy Share}_{i,c,t} = \frac{\sum_{\tau \leq t} v_{i,c\tau}}{\sum_{\tau \leq t} \sum_i v_{i,c\tau}}$$

# Wages decline with higher vacancy shares

## Non-college workers



## College workers



Confirmed in regressions after controlling for vacancy characteristics



# Empirical Specification

Log Vacancies $_{i,c,t} = \alpha + \beta$  MP easing $_t \times$  Labor Market Power $_{i,c,t-1} + \theta X_{i,c,t} + \gamma_{i,t} + \gamma_{c,t} + \varepsilon_{i,c,t}$

$X_{i,c,t}$  includes the Fed. information shock and its interactions with the market share

$\gamma_{i,t}$  - firm-time fixed effects

$\gamma_{c,t}$  - commuting zone - time fixed effects

- Firm-Time fixed effects absorb any firm-level shocks, such as productivity, increase in funding, changes in stock prices
- Commuting zone - Time fixed effects absorb any regional variation, such as regional demand shocks

# Firms with more labor market power are more responsive to MP

	Log Vacancies <sub><i>i,c,t</i></sub>						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
MP easing <sub><i>t</i></sub>	0.351*** (0.036)	0.647*** (0.032)		0.696*** (0.035)			
LMP <sub><i>i,c,t-1</i></sub>	23.166*** (1.816)	14.505*** (1.252)	14.958*** (1.275)	20.318*** (1.534)	20.866*** (1.560)	21.439*** (1.667)	22.713*** (1.639)
MP easing <sub><i>t</i></sub> × LMP <sub><i>i,c,t-1</i></sub>	13.913*** (3.111)	3.400* (1.789)	5.439*** (1.834)	5.442** (2.330)	7.624*** (2.398)	8.722** (3.389)	7.895** (3.839)
Obs.	15,092,441	15,070,026	15,070,026	15,070,026	15,070,026	12,851,844	12,851,727
Firm FE		✓	✓	✓	✓		
Time FE			✓		✓		
CZ FE				✓	✓	✓	
Firm × Time FE						✓	✓
CZ × Time FE							✓
No. Firms	377,669	355,254	355,254	355,254	355,254	199,839	199,839

# Effect is concentrated at the tail of the labor market power distribution

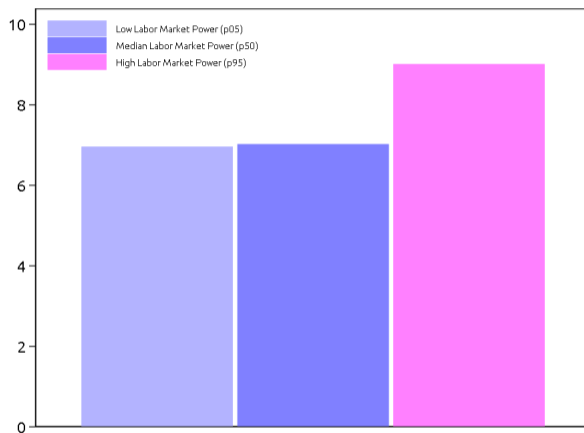


Figure:  $\Delta$  Vacancy Postings Growth (pp) in Response to 10 bp Monetary Policy Easing

# The response of firms with market power is persistently different

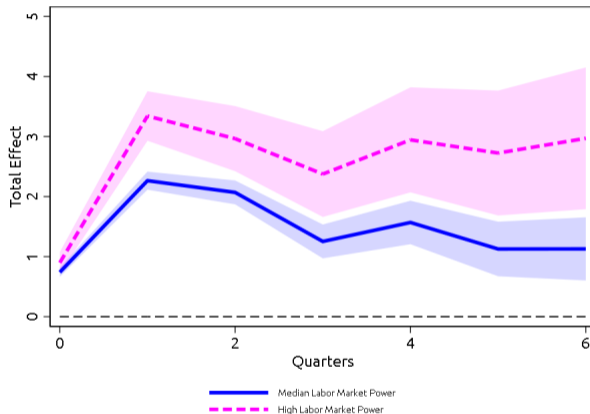


Figure: Response of Vacancy Postings to Monetary Policy Easing Across Horizons

# Heterogeneity

- Burning Glass provides granular data on postings, including on skill and education requirements, so far we focused on college education and software skills

$\approx 40\%$  of college vacancies,  $\approx 28\%$  of software vacancies, correlation  $\approx 29\%$

$$\begin{aligned} \text{Log Vacancies}_{i,c,t,j} = & \alpha + \beta \text{ MP easing}_t \times \text{Labor Market Power}_{i,c,t-1} + \\ & \delta \text{ MP easing}_t \times \text{Labor Market Power}_{i,c,t-1} \times \text{Type}_j + \theta X_{i,c,t} + \\ & + \gamma_{i,t} + \gamma_{c,t} + \varepsilon_{i,c,t,j} \end{aligned}$$

- The **significance** of the triple interaction coefficient reveals whether there is significant heterogeneity
- The **opposite signs** of double and triple interaction would mean that the effect is weaker for the [Type = 1]

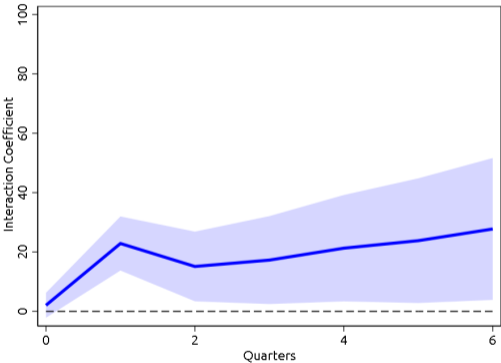
# Heterogeneity across vacancy types

	Log Vacancies <sub><i>i,c,t,j</i></sub>			
	(1)	(2)	(3)	(4)
LMP <sub><i>i,c,t-1</i></sub>	18.036*** (1.282)	19.173*** (1.337)	18.391*** (1.311)	21.736*** (1.523)
Type <sub><i>j</i></sub>	-0.148*** (0.018)		-0.243*** (0.014)	
MP easing <sub><i>t</i></sub> × LMP <sub><i>i,c,t-1</i></sub>	6.430** (2.868)	7.785*** (2.843)	7.495*** (2.703)	8.701** (3.631)
MP easing <sub><i>t</i></sub> × Type <sub><i>j</i></sub>	-0.413*** (0.040)		-0.130*** (0.040)	
LMP <sub><i>i,c,t-1</i></sub> × Type <sub><i>j</i></sub>		-2.286*** (0.575)		-7.932*** (0.712)
MP easing <sub><i>t</i></sub> × LMP <sub><i>i,c,t-1</i></sub> × Type <sub><i>j</i></sub>		-2.938* (1.623)		-3.576 (2.400)
Obs.	17,342,560	17,342,560	16,277,587	16,277,587
Vacancy Type	college	college	software	software
Firm × Time FE	✓	✓	✓	✓
CZ × Time FE	✓	✓	✓	✓
Vac. Type × Time FE		✓		✓

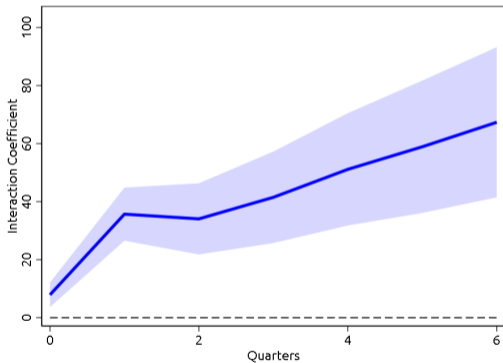
Effect of labor market power is stronger for non-college & non-tech vacancies

Consistent with lower search abilities

# Labor market power effect on vacancy postings in response to a monetary policy easing shock



(a) Vacancies with college requirement



(b) Vacancies without college requirement

# Employment Response from Compustat

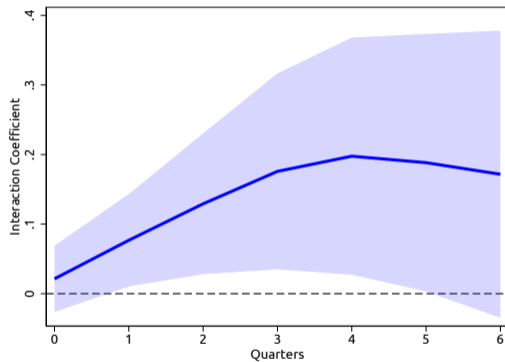


Figure: Labor market power effect on employment in response to MP Easing



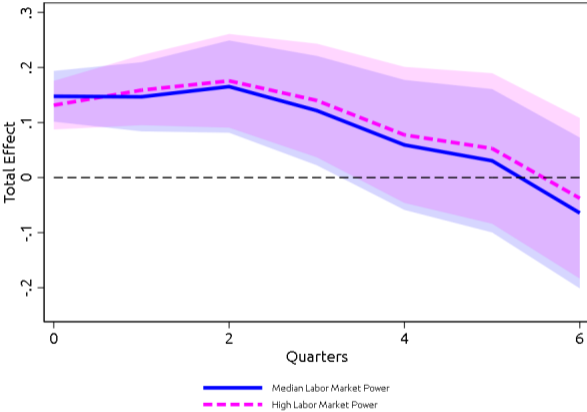
# Wages

- Large share of vacancies in Burning Glass report wages
- Some postings report highest and lowest possible wage - we take the mean
- *Hazell, Patterson, Sarsons, Taska (2021)*: surveys suggest that employers pay the posted wages

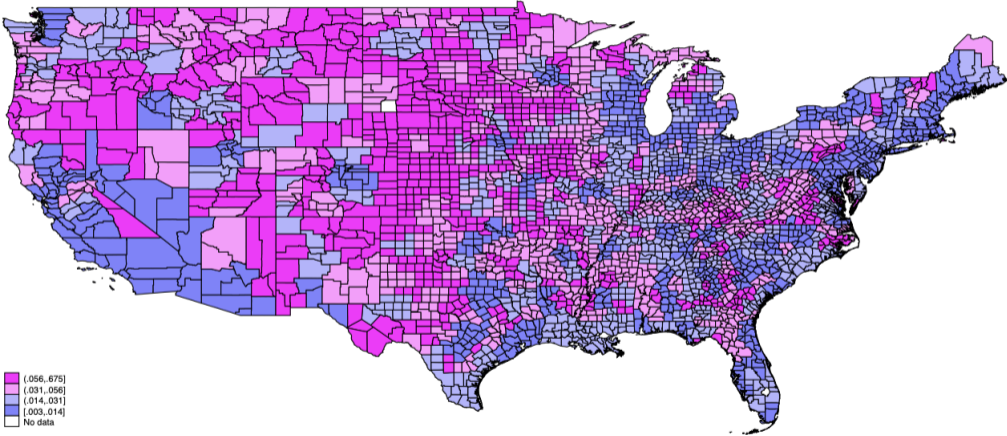
# Response of wages does not depend on labor market power

	Log Wages <sub><i>i,c,t</i></sub>						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
MP easing <sub><i>t</i></sub>	0.001 (0.038)	0.146*** (0.023)		0.148*** (0.024)			
LMP <sub><i>i,c,t-1</i></sub>	0.277** (0.137)	-0.084 (0.085)	-0.011 (0.093)	0.056 (0.061)	0.112* (0.065)	0.354*** (0.077)	0.390*** (0.081)
MP easing <sub><i>t</i></sub> × LMP <sub><i>i,c,t-1</i></sub>	0.191 (0.389)	-0.579** (0.271)	0.009 (0.271)	-0.495* (0.279)	0.090 (0.277)	0.433 (0.349)	0.363 (0.482)
Obs.	3,611,431	3,546,366	3,546,366	3,546,366	3,546,366	2,716,562	2,715,673
Firm FE		✓	✓	✓	✓		
Time FE			✓		✓		
CZ FE				✓	✓	✓	
Firm × Time FE						✓	✓
CZ × Time FE							✓
No. Firms	281,380	216,315	216,315	216,315	216,315	97,858	97,856

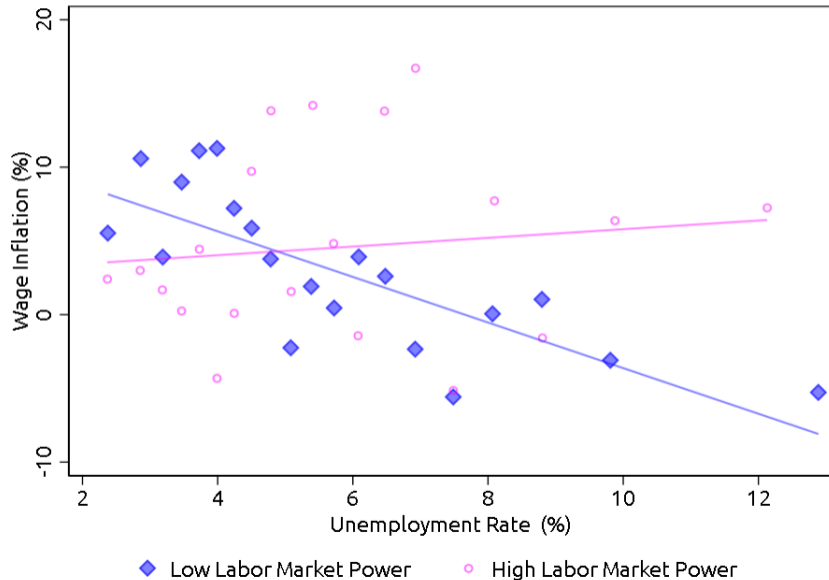
# Wage Response to Monetary Policy Easing



# Geography of Labor Market Power



# Phillips Curve Implication



# Conclusion

- Labor market power strengthens the employment effects of monetary policy
- Especially for low-skilled workers
- The capacity of monetary policy to influence wages might be more limited, especially for firms that have high labor market power
- Results help explain modest increase in wages in the post-GFC recovery, while unemployment significantly declined (“wageless recovery”)
- Ongoing tightening of U.S. monetary policy could have important implications for income inequality across skills groups and regions