Monetary Policy under Labor Market Power

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Introduction

- **Labor market power (LMP):** wages $\approx$ 30% "marked down" below the marginal product of labor Hershbein et al. (2022)
- **Source of the wage markdown?**
  - "classical" LMP – firms exploit imperfect substitution across labor markets
    Berger et al. (2022), Bhaskar et al. (2002), Robinson (1969)
  - "search" LMP – firms exploit advantage in reducing search frictions
    Jarosch et al. (2019), Burdett & Mortensen (1998), Moen (1997), Pissarides (1985)
- **Importance of distinguishing between the two**
  - "classical" LMP leads to lower employment and deadweight losses
  - "search" LMP does **not** necessarily reduce employment and wage markdowns are **not** always inefficient Hosios (1990), Moen (1997)

▸ More Literature

This Paper

Questions:

- Are the macro implications of classical and search LMP different?
  - equilibrium relationship (in the cross-section of vacancies)
  - response to exogenous monetary policy shocks
- Which source of LMP does the data on vacancies and wages favor?

Method:

- Rich framework that subsumes several “classical” LMP models and is enhanced with simplified directed search
- Use millions of onlice vacancy postings from Lightcast to test model predictions on equilibrium and monetary policy responses

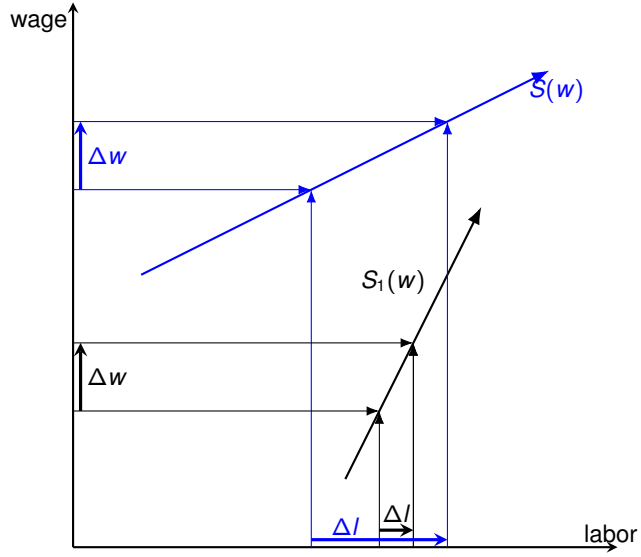
Findings: “Search” LMP Matters

- For equilibrium wages and vacancies
  - Vacancies of firms that account for a greater share of the local labor market have lower wages, consistent with search LMP, *not* classical
  - Back-of-the-envelope: at least 55% of cross-firm variation in markdowns is driven by cross-firm variation in search labor market power
- For monetary policy responses
  - Labor market power strengthens the labor demand effects of monetary policy, consistent with search LMP, *not* classical
  - Effect is stronger for non-skilled workers
  - But no differential effects on wages

Intuition: Response to Monetary Policy

- Classical monopsony:
  - Firms with high LMP face steeper labor supply (LS) curve
  - Following monetary loosening: High classical LMP firm hires *less*
- Introducing directed search and search monopsony:
  - Firms can now attract workers using two margins: wages and vacancies
  - Employees trade-off higher wages and likelihood of job matching
  - High LMP firm offers more certain employment
  - Following a monetary loosening: High search LMP firm posts more vacancies (shift of LS curve to right) and hires *more*

Intuition: Response to Monetary Policy under Classical Monopsony



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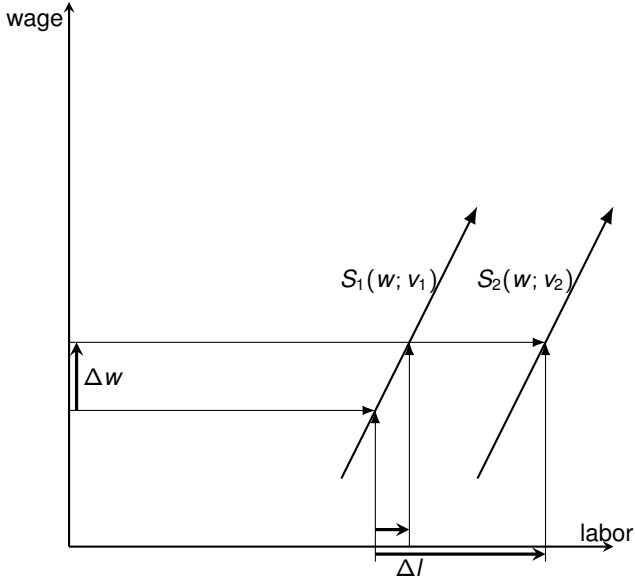
Intuition: Response to Monetary Policy under Search Monopsony



Model Predictions

- For equilibrium wages and vacancies (Test 1)
  - firms with classical LMP have lower equilibrium wages and vacancies
  - firms with search LMP have lower equilibrium wages, but higher vacancies
- For monetary policy responses (Test 2)
  - If wages respond similarly (excludes heterogeneity in productivity or any other confounding factor):
  - vacancies of firms with classical LMP do not respond differentially
  - vacancies of firms with search LMP respond more

▸ Model extensions

Data

- **Lightcast (formerly Burning Glass Technologies)**
  - Near universe of U.S. online vacancy postings: $\approx$ 70% of all U.S. online vacancies; approximately 250 million vacancies for 2007; 2010-19
  - Fine geographical breakdown $\rightarrow$ establishment level data
  - Industry, occupation, job requirements, posted wages

  $\Rightarrow$ Collapsed to firm-region-time level
  - $\approx$ 17% of posted vacancies report wages; Hazell et al. (2021) check that wage setting patterns are consistent with the broader economy
- **Monetary Policy (MP) shocks** using Jarocinski and Karadi (2020), control for information component

Test 1: Measures of Equilibrium Vacancies and Wages

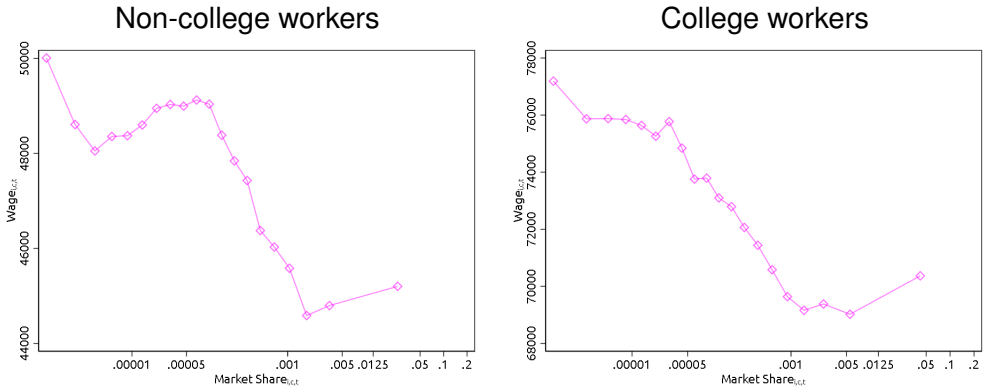
- **Vacancy Share**: Share of vacancies posted by a single firm in a local labor market = U.S. census commuting zone
- Use **cumulative share** to allow for inclusion of smaller firms

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

- **Wages**: Cleaned from occupational and commuting-zone related factors
- Use **cumulative average** to allow for inclusion of smaller firms (normalized)

$$\text{Equilibrium Wage Measure}_{i,c,t} = \frac{\sum_{\tau \leq t} v_{i,c,\tau} \times w_{resi,c,\tau}}{\sum_{\tau \leq t} v_{i,c,\tau}}$$

Test 1: Equilibrium Relationship



Evidence of "search" LMP: negative relationship between wages and vacancies

▸ Formal test

Test 2: Approach to Measure Monetary Policy Response

$$\log \textit{vacancies}_{i,c,t} = \beta^{vv} \text{ MP easing}_t \times \text{eq. vacancies}_{i,c,t-1} + \Theta^{vv}\text{controls} + \epsilon^{vv}_{i,c,t}$$

$$\log \textit{vacancies}_{i,c,t} = \beta^{vw} \text{ MP easing}_t \times \text{eq. wages}_{i,c,t-1} + \Theta^{vw}\text{controls} + \epsilon^{vw}_{i,c,t}$$

$$\log \textit{wages}_{i,c,t} = \beta^{wv} \text{ MP easing}_t \times \text{eq. vacancies}_{i,c,t-1} + \Theta^{wv}\text{controls} + \epsilon^{wv}_{i,c,t}$$

$$\log \textit{wages}_{i,c,t} = \beta^{ww} \text{ MP easing}_t \times \text{eq. wages}_{i,c,t-1} + \Theta^{ww}\text{controls} + \epsilon^{ww}_{i,c,t}$$

- Controls:
  - Fed. information shock and its interactions with equilibrium vacancies or wages
  - commuting zone - time fixed effects, that absorb time-varying regional shocks
  - firm fixed effects that absorb any time-invariant firm-level variation
- Test 2: $\beta^{vv} > 0, \beta^{vw} < 0$ (search LMP is key)

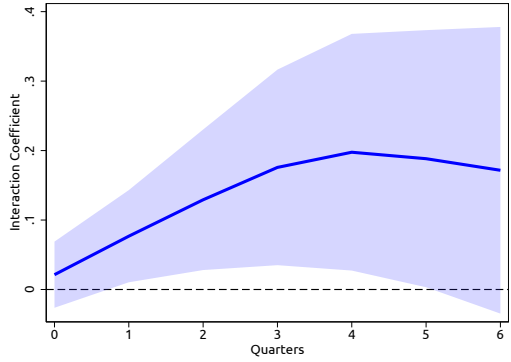
  $\beta^{wv} = \beta^{ww} = 0$ (no confounding effects)

Test 2: Results

	Log Vacancies$_{i,c,t}$		Log Wages$_{i,c,t}$	
	(1)	(2)	(3)	(4)
MP easing$_t$ $\times$ Equilibrium Vacancies	6.906**		0.128	
	(2.707)		(0.377)	
MP easing$_t$ $\times$ Equilibrium Wages		-0.061**		-0.020
		(0.028)		(0.033)
Obs.	15,069,930	4,135,037	3,545,581	1,827,037
Firm FE	✓	✓	✓	✓
CZ $\times$ Time FE	✓	✓	✓	✓
No. Firms	355,254	145,726	216,310	110,303

Note on employment

$$\hat{l}_{it} = \left(\frac{1}{1-\alpha_i} - 1\right)\hat{m}_{it} + \frac{1}{\gamma_i}\left(\frac{1}{1-\alpha_i}\hat{m}_{it} - \frac{\int_i \lambda_i \frac{1}{\gamma_i}\frac{1}{1-\alpha_i}\hat{m}_{it}dt}{\int_i \lambda_i \frac{1}{\gamma_i}di}\right) + \hat{N}_t$$



Cumulative impulse response of employment: firms with higher equilibrium vacancies respond more

Robustness

- Cumulative impulse response
  - ▸ Cumulative IRF
- Sets of fixed effects
  - ▸ Vacancies to Vacancies β^{VV}
  - ▸ Vacancies to Wages β^{VW}
  - ▸ Wages to Vacancies β^{WV}
  - ▸ Wages to Wages β^{WW}
- Equilibrium wage measure
  - ▸ Wages to Wages β^{VW}
  - ▸ Wages to Wages β^{WW}
- Restriction of sample to only observations with wages
  - ▸ Vacancies to Vacancies β^{VV}
  - ▸ Vacancies to Wages β^{VW}
- Considering markets at the ONET-occupation level
  - ▸ Vacancies to Vacancies β^{VV}
  - ▸ Vacancies to Wages β^{VW}
  - ▸ Wages to Vacancies β^{WV}
  - ▸ Wages to Wages β^{WW}

Conclusion and Policy Implications

Labor market power arises from two main sources:

- Classical Monopsony (due to imperfect substitution between labor markets)
  - Generates markdowns and inefficiently low employment
  - Justifies policies like minimum wages
- Search Monopsony (due to uncertain job prospects)
  - Can be efficient and may generate excess employment

This paper studies relative importance in a unified framework:

- Search monopsony fits U.S. data on wages and vacancies better
- Calls for further research on distinguishing these forms of monopsony and implications for design of labor market policies