Inclusive Monetary Policy: How Tight Labor Markets Facilitate Broad-Based Employment Growth

Nittai Bergman
Tel Aviv University

Benjamin Born
Frankfurt School of Finance and Management

David Matsa
Northwestern University and NBER

Michael Weber
University of Chicago, CEPR, and NBER

November 21, 2022

Motivation

With regard to the employment side of our mandate, our revised statement emphasizes that maximum employment is a broad-based and inclusive goal. This change reflects our appreciation for the benefits of a strong labor market, particularly for many in low- and moderate-income communities.

Jerome Powell, 2020 Jackson Hole Economic Policy Symposium

Motivation

- Monetary policy traditionally focused on overall labor market statistics
    - But large heterogeneity in labor market attachment across groups
    - Groups w/ low attachment may enter only in tight labor markets
      Ranking effects as in Blanchard and Diamond (1994) and Blanchard (1995)

- "Broad-based and inclusive" gains may require tight labor markets
    - Motivation for 2020 MP Review: increase employment in these groups
    - "Lower for longer"

- Little systematic empirical (or theoretical) evidence

How does market tightness mediate effects of monetary policy?

This Paper

Empirics

- MP effect on empl. growth of different groups across labor markets

    - Demographic groups: by race, education, or sex

    - Data structure: employment by group, industry, and local labor market

    - Panel structure allows absorbing rich fixed effects

    - Identify effects from employment growth in tight vs. slack markets

- Result: least attached groups benefit most in tight markets

Theory

- New Keynesian model with heterogeneous workers

- Counterfactuals (AIT vs. Taylor rule, flatter Phillips Curve)

Related Literature

- **Distributional Effects of Monetary Policy**

  Romer and Romer (1999), Coibion et al. (2017), Thorbecke (2001), Carpenter and Rodgers (2004), Zavadovny and Zha (2000), Amberg, Jansson, Klein, and Picco (2021), Lau Andersen, Johannesen and Jorgensen (2021)

- **Cyclical fluctuations of labor market outcomes**

  Freeman et al. (1973), Freeman (1990), Clark and Summers (1980), Bound and Freeman (1992), Elsby et al. (2010)

- **Ranking effects in labor markets and unemployment in NK model**

  Blanchard and Diamond (1994), Blanchard (1995), Blanchard and Katz (1997), Christiano et al. (2005, 2010, 2011, 2020), Walsh (2003, 2005), Trigari (2009), Blanchard and Gali (2010), Faia (2008, 2009), Gertler et al. (2008), Gali (2011a, b), Gali et al. (2012), Ravenna and Walsh (2012), Baek (2020)

- **HANK models and transmission at micro level**

  Kaplan, Moll, Violante (2018), Auclert (2019), Auclert et al. (2020), Bayer et al. (2019), Krueger et al. (2016), Wong (2016), Berger et al. (2018), Eichenbaum et al. (2018), Beraja et al. (2019)

Data

- Quarterly local labor-market level employment statistics from QWI
  - Sample: Q1 1990 to Q1 2019
  - 895 local labor markets: 380 MSAs + 515 Micropolitan SAs
  - Focus on race, education, gender within 4-digit NAICS industry

- Employment growth over the subsequent four quarters $t + 1$ to $t + 4$

- Local tightness: the prime-age (25–54) employment–population ratio
  - Highly correlated w/ vacancy-to-unemployment ratios at national level

Measuring Monetary Policy

- Average effective fed funds over quarter

- High frequency shocks acround FOMC announcements using futures
  Guerkaynak, Sack, & Swanson (2005)

- Instrument fed funds rate using running sum of shocks

- Results similar in reduced form, 2SLS, and baseline regressions

Average Labor Force Attachment by Demographic Group

	Mean
Blacks	56.6%
Whites	62.3%
Less than High School	40.3%
High School	58.9%
Some College	68.1%
Bachelors Degree	75.7%
Female	55.2%
Male	68.5%

- Large differences in average participation by race, education & gender

Empirical Specification

For each demographic group g, we run the following OLS regression:

$$EmplGrowth_{g,j,m,t} = \beta_1 \times FedFunds_t \times Empl/Pop_{m,t-1} +$$
$$\beta_2 \times Empl/Pop_{m,t-1} + \theta_{j,m} + \delta_{j,t} + \epsilon_{j,g,m,t}, \quad (1)$$

- *EmplGrowth*: growth rate of employment
- *Empl/Pop*: prime age employment-to-population ratio
- j: industry
- m: local labor market
- $\theta_{j,m}$: Industry-by-MSA fixed effects
- $\delta_{j,t}$: Industry-by-time fixed effects
- Standard error: clustered at the local labor market level
- β_1: sensitivity of employment growth to monetary policy by tightness

Employment Growth & Monetary Policy by Tightness

Panel A: Race

	(1) Blacks	(2) Whites
Fed Funds Rate X Emp/Pop	-0.45**	-0.06
	(0.21)	(0.10)
	[0.015]	

SE in parentheses

Number in square brackets reports p-value of difference

- Monetary easing → greater Black employment growth in tight vs slack markets
- 1 std ↓ FFR → 0.37pp. ↑ growth in labor markets at 90th than 10th percentile
- No differential growth rate for Whites
- Difference in estimates highly statistically significant

Employment Growth & Monetary Policy by Tightness

Panel B: Education	(3)	(4)	(5)	(6)
	Less than	High	Some	Bachelors
	High School	School	College	Degree
Fed Funds Rate X Emp/Pop	-0.29**	-0.08	-0.08	-0.09
	(0.11)	(0.09)	(0.09)	(0.10)
	[0.01]	[0.88]	[0.86]	

SE in parentheses

Number in square brackets reports p-value of difference

- Monetary easing → greater less than HS growth in tight vs slack markets

- 1 std ↓ FFR → 0.24pp. ↑ growth in labor markets at 90th than 10th percentile

- No differential growth rate for other groups

- Difference in estimates highly statistically significant

Employment Growth & Monetary Policy by Tightness

Panel C: Sex		
	(7)	(8)
	Female	Male
Fed Funds Rate X Emp/Pop	-0.21*	-0.11
	(0.107)	(0.11)
	[0.05]	

SE in parentheses

Number in square brackets reports p-value of difference

- Monetary easing → greater female growth in tight vs slack markets

- 1 std ↓ FFR → 0.17pp. ↑ growth in labor markets at 90th than 10th percentile

- No differential growth rate for male

- Difference in estimates highly statistically significant

Model

- New Keynesian model with workers of different types

- Workers separated for endogenous & exogeneous reasons
  Ravenna & Walsh (2012)

- Aggregate and worker-specific productivity

- Workers differ in idiosyncratic productivity (i.i.d. over time)

- Household preferences standard
  - Utility separable btw consumption and disutility of work
  - Consumers display habit formation over aggregate consumption

- Intermediate & final goods producer to uncouple wage & price setting

Timing

- Exog. separation: fraction $\delta \in [0, 1]$ of workers separate from firms

- Aggregate productivity: common knowledge

- Workers' productivity: i.i.d. and observable to firm employing worker

- Endog. separation: Firms fire workers if productivity below threshold

- Hiring: firms employ third-party agencies to interview workers
  - Interviews reveal workers' productivity levels

- Production occurs, and wages are paid

Labor Market

- $\bar{a}_t$: thresholds for which worker profitable to hire

- $\underline{a}_t$: thresholds for which worker profitable to fire

- Because of hiring costs: $\bar{a}_t > \underline{a}_t$

- Beginning of period unemployed U after exogenous separation:

$$U_t = 1 - (1 - \delta)N_{t-1} \qquad (2)$$

- Hiring H in period t out of pool of unemployed U:

$$H_t = (1 - \bar{a}_t)U_t \qquad (3)$$

- Total employment N given by non-separated and newly hired:

$$N_t = (1 - \underline{a}_t)(1 - \delta)N_{t-1} + H_t \qquad (4)$$

Hiring

- Third-party agency interviews workers for firms

- Firm specifies hiring threshold, $\bar{a}_t$ and pays a fee per hire
  - $\bar{a}_t > \underline{a}_t$: agency does not interview endog. separated workers

- More interviews per hire when searching for higher a worker
  - Expected number of interviews per hire increases in $\frac{1}{1-\bar{a}_t}$
  - Hence, expected cost per worker hired is increasing in threshold

- Agency sends earnings to an offshore account

Intermediate Firms

- Mass 1 operates in competitive markets

- Intermediate firms: flexible prices, common technology

- At firing threshold, firm indifferent between firing and not firing

  - Wage equals benefit of retaining worker (production + option value):

  $$W_t = P_t^I A_t \underline{a}_t + V_t$$

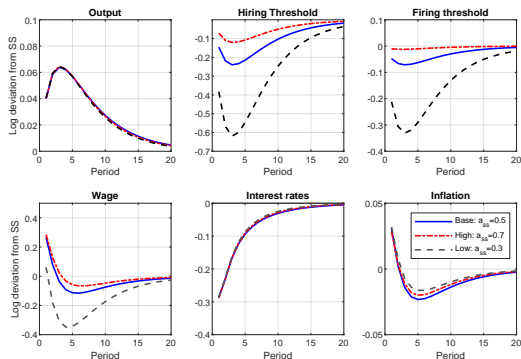 where P_t^I is price index of intermediate goods

- At the hiring threshold, firm indifferent between hiring and not hiring

  - Total cost of hiring (interviewing + wages) equals benefit of hiring:

  $$\frac{G_t}{1 - \bar{a}_t} + W_t = P_t^I A_t \bar{a}_t + V_t$$
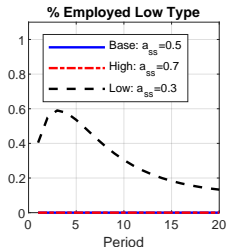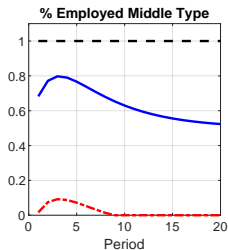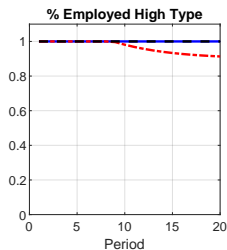
Other Ingredients

- Final firms with sticky prices

- Taylor Rule with interest rate smoothing

Impulse Response Functions: By Tightness


- Expansionary monetary policy surprise → persistent decline in thresholds
- Loose monetary policy particularly benefits lower skilled workers
- Takes fewer interviews to find candidates above hiring threshold
- Lower steady state thresholds — tighter labor market — result in stronger decrease

Employment by Labor Type and Tightness

% Employed High Type

% Employed Middle Type

% Employed Low Type

Legend:
- Base: $a_{ss}=0.5$
- High: $a_{ss}=0.7$
- Low: $a_{ss}=0.3$

- Define three types by tertiles of idiosyncratic productivity
- Plot percentage of certain type employed over time following MP shock
- High type: not sensitive to monetary policy independent of tightness
- Low type: employment increases in tight but not slack labor markets

Impulse Response Functions: By Stickiness
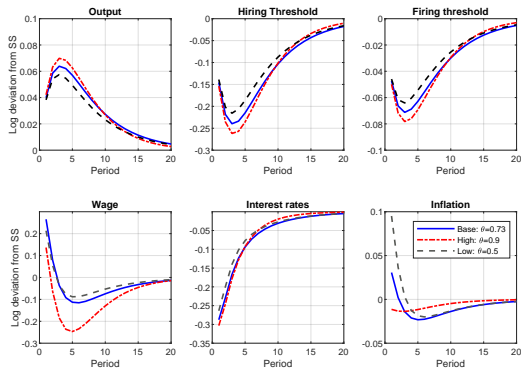
- Flat Phillips curve one motivation to not pre-emptively increase target rate
- Study comparative statics to changes in average price stickiness
- High stickiness → larger decreases in the hiring and firing thresholds

Impulse Response Functions: AIT versus IT
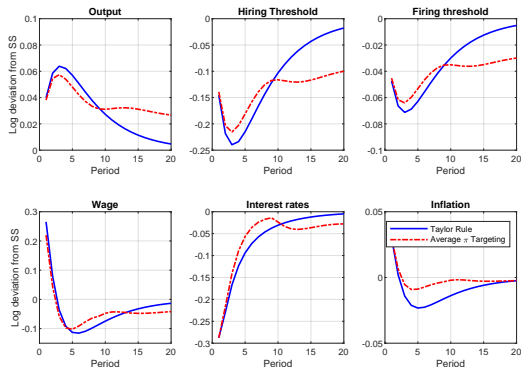
- Change of framework to average inflation target (AIT)
- Study comparative statics to differences in policy reaction function
- AIT $\rightarrow$ more persistent decline in the hiring and firing thresholds

Conclusion

- Expansionary monetary policy: heterogeneous effects on labor market

  - Benefits low attachment workers when labor market is tight

  - Pattern holds across racial, education, and sex categories

- NK model: average inflation targeting benefits less-attached workers

- Empirical & theoretical results both suggest

  - Sustained expansionary monetary policy allows labor markets to tighten

  - Facilitate robust employment growth among less-attached workers

- Optimal monetary policy and welfare analysis left for future work