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

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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 SAM and heterogeneous workers
- Counterfactuals (Stronger inflation response, 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), Alves and Violante (2023)

- 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 eight quarters $t+1$ to $t+8$
- 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	-1.09**	0.10
	(0.40)	(0.18)
	[0.00]	

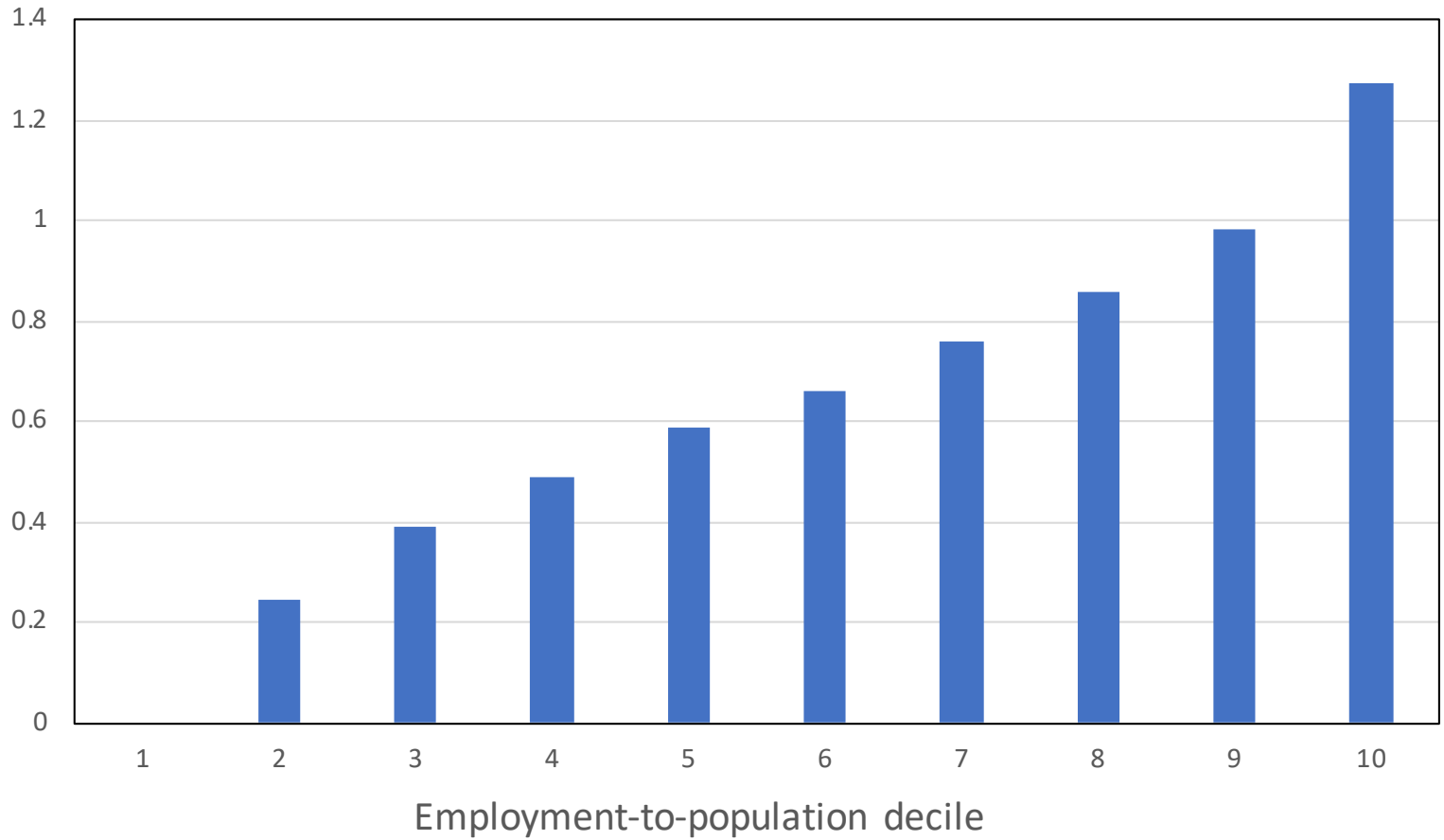
SE in parentheses

Number in square brackets reports p-value of difference

- Monetary easing $\rightarrow$ greater Black employment growth in tight vs slack markets
- 1 std $\downarrow$ FFR $\rightarrow$ 0.91pp. $\uparrow$ 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

Predicted Black Employment Growth by Labor Market Tightness



- Substantial heterogeneity across labor markets

Employment Growth & Monetary Policy by Tightness

Panel B: Education

	(3) Less than High School	(4) High School	(5) Some College	(6) Bachelors Degree
Fed Funds Rate X Emp/Pop	-0.47**	0.00	0.02	0.05
	(0.20)	(0.17)	(0.16)	(0.17)
	[0.00]	[0.66]	[0.77]	

SE in parentheses

Number in square brackets reports p-value of difference

- Monetary easing $\rightarrow$ greater less than HS growth in tight vs slack markets
- 1 std $\downarrow$ FFR $\rightarrow$ 0.39pp. $\uparrow$ 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) Female	(8) Male
Fed Funds Rate X Emp/Pop	-0.26	-0.03
	(0.18)	(0.20)
	[0.02]	

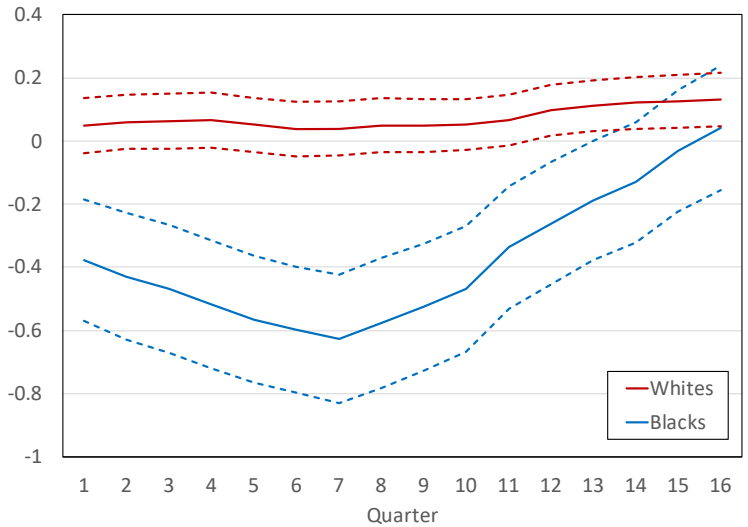
SE in parentheses

Number in square brackets reports p-value of difference

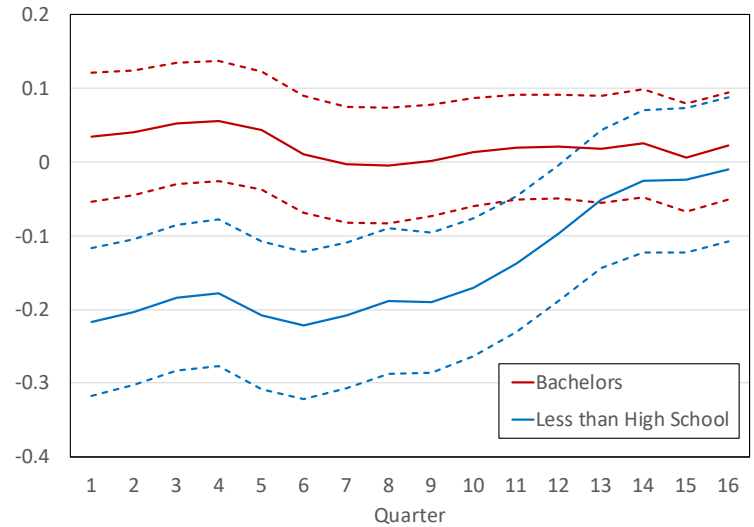
- Monetary easing $\rightarrow$ greater female growth in tight vs slack markets
- Female coefficient order of magnitude larger and statistically different from zero when using high frequency monetary shocks
- Difference in estimates highly statistically significant

Employment: Temporal Dynamics

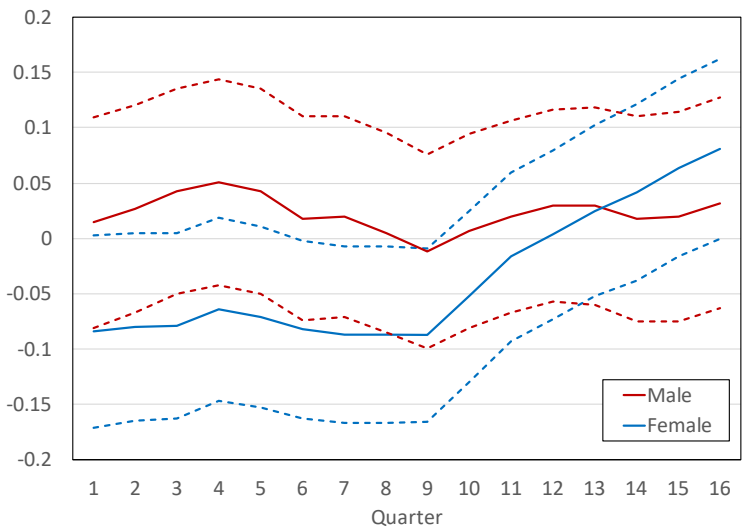
Panel A. Race



Panel B. Education



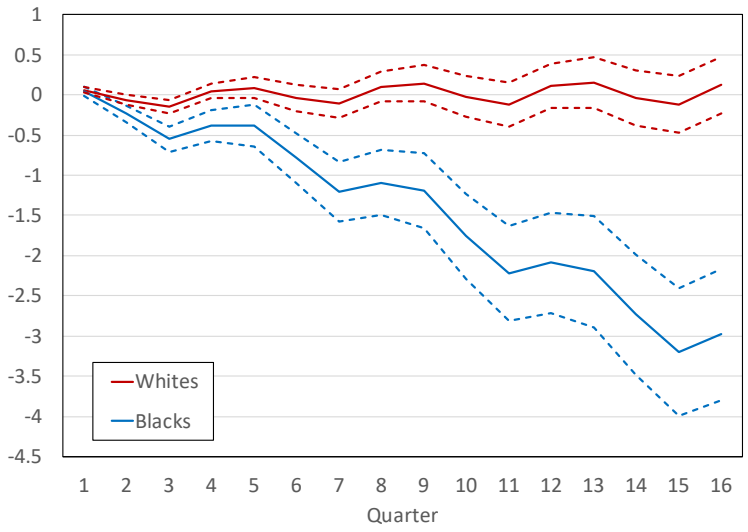
Panel C. Sex



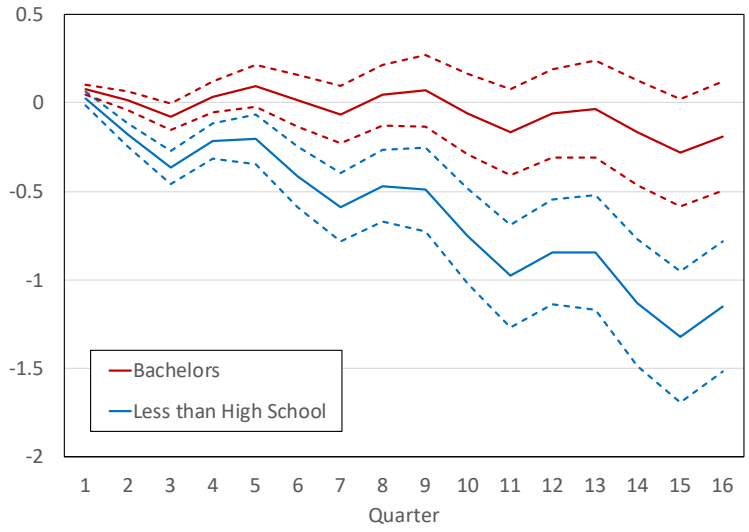
Employment: Temporal Dynamics

Long-run Impact

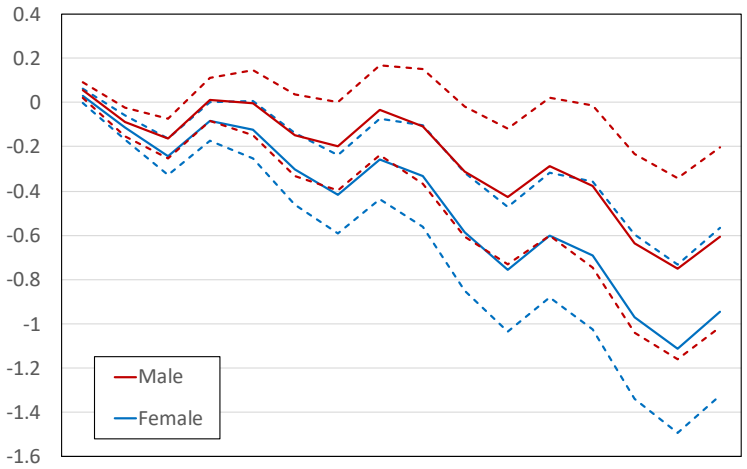
Panel A. Race



Panel B. Education



Panel C. Sex



Model

- New Keynesian model with search-and-matching (SAM) friction

  Blanchard and Galí (2010)

- Two fixed types of workers: high-skilled and low-skilled

  Dolado, Motyovszki, and Pappa (2021)

- Household preferences standard
  - Households supply labor hours inelastically $\rightarrow$ full participation
  - Full insurance against unemployment risk within household type

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

Search and Matching

- Intermediate goods firms post vacancies v_t^k for skill level $k \in \{H, L\}$
- Vacancies matched with unemployed workers U_t^k according to

$$m_t^k \left(v_t^k, U_t^k \right) = \psi^k \left(v_t^k \right)^{\zeta} \left(U_t^k \right)^{(1-\zeta)} , \tag{2}$$

  $\rightarrow \psi^k$: matching efficiency that might differ in skill type

  $\rightarrow \zeta$: matching elasticity

- Fraction σ^k of employed workers get exogenously separated from job
- Number of employed workers of skillset k then follows

$$N_{t+1}^k = \left(1 - \sigma^k \right) N_t^k + m_t^k \tag{3}$$

Intermediate Firms

- Mass 1 operates in competitive markets
- Intermediate firms: flexible prices, common technology
- Homogeneous good produced with high/low-skilled labor and capital

$$F\left(K_t, N_t^H, N_t^L\right) = A_t K_t^{\iota}\left[\omega\left(N_t^H\right)^{\upsilon} + (1-\omega)\left(N_t^L\right)^{\upsilon}\right]^{\frac{1-\iota}{\upsilon}} \quad (4)$$

[Alternative: Krusell, Ohanian, Rios-Rull, and Violante (KORV, 2000) production function]

- Vacancy posting in t at fixed cost κ affects labor input in $t+1$
- Wages determined through Nash bargaining

Other Ingredients

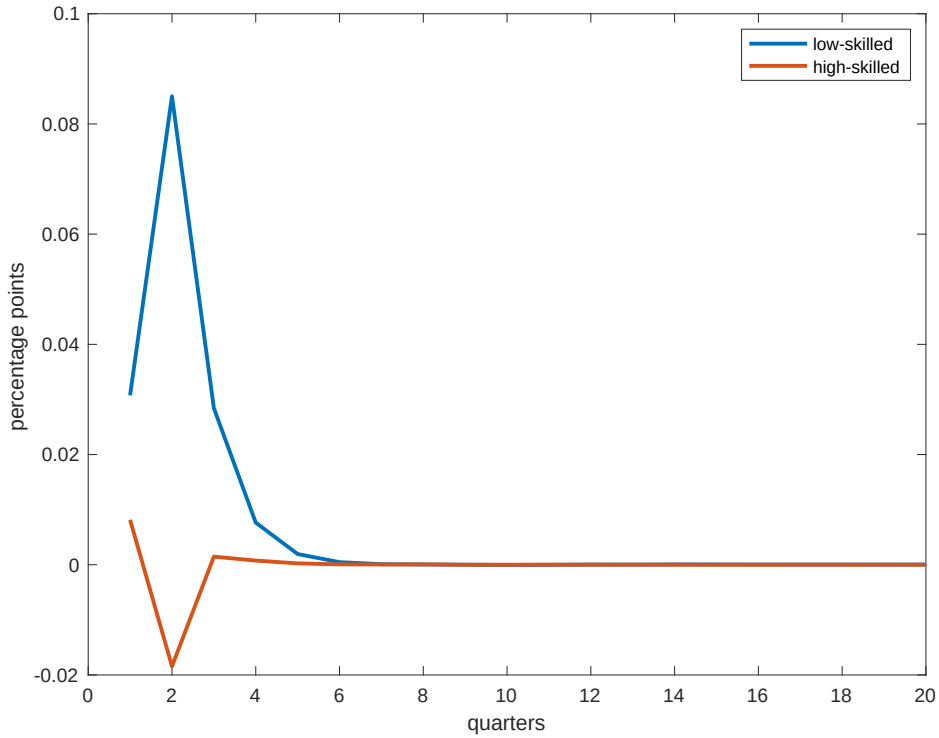
- Final firms with sticky prices
- Central Bank follows Taylor rule

Experiment

- Solve the model at second order
- Generalized IRFs to 25bp monetary easing at two points in state space
  1. Ergodic mean with "average tightness"
  2. Point with 25 percent higher tightness (in both labor markets)
- Plot the differential IRF between these two scenarios

Impulse Response Functions: Tightness

Employment: IRF(increas. tightness) – IRF (average tightness)



- Expansionary monetary policy surprise

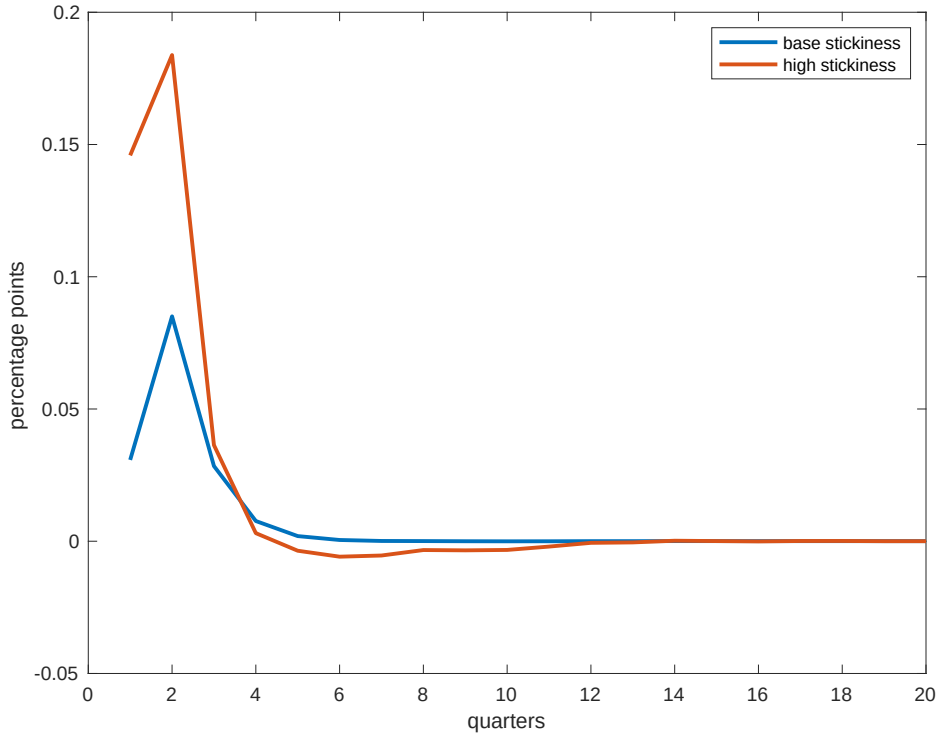
  $\rightarrow$ low-skilled employment responds more strongly in tight labor market

  $\rightarrow$ high-skilled employment response very similar under different tightness levels

- Loose monetary policy particularly benefits lower skilled workers

Impulse Response Functions: Stickiness

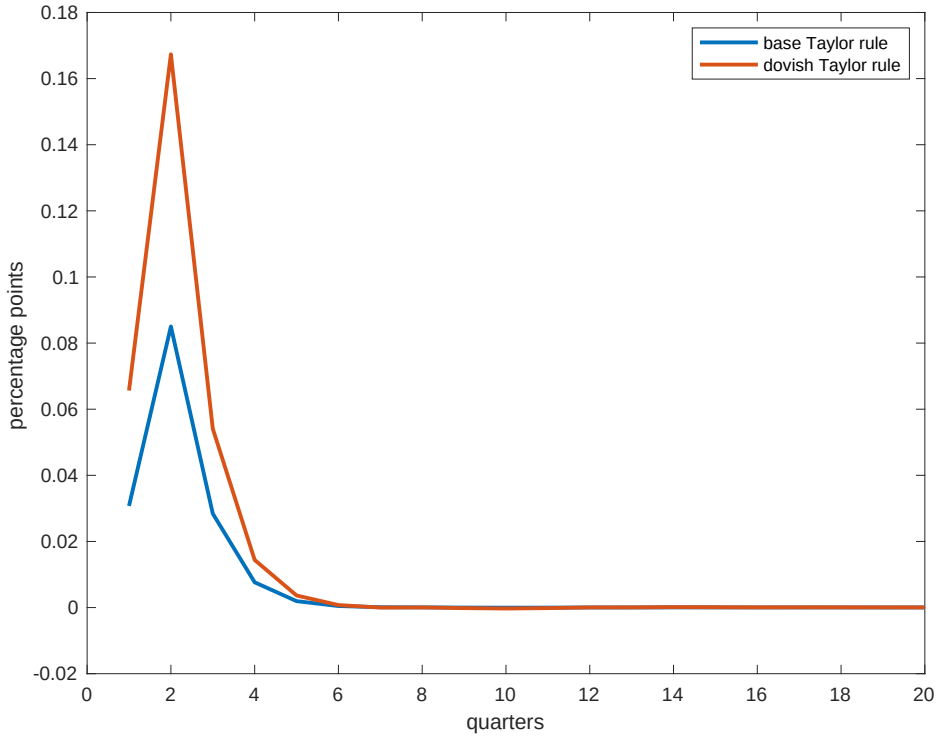
Low-skilled Employment: IRF(increas. tightness) – IRF (average tightness)



- Flat Phillips curve one motivation to not pre-emptively increase target rate
- Study comparative statics to changes in price stickiness ($\theta = 0.8 \rightarrow \theta = 0.9$)
- High stickiness $\rightarrow$ stronger effect of tightness on low-skilled employment response

Impulse Response Functions: Policy Reaction Function

Low-skilled Employment: IRF(increas. tightness) – IRF (average tightness)



- Recent discussions on policy reaction function
- Study comparative statics to differences in inflation response
- Weaker inflation response $\rightarrow$ stronger effect of labor-market tightness

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: more dovish policy stance 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