# Firm Wage Setting and On-the-Job Search Limit Wage-Price Spirals<sup>1</sup>

Justin Bloesch
Cornell Economics & ILR

Seung Joo Lee Saïd Business School, University of Oxford

Federal Reserve Bank of New York

Jacob Weber

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<sup>&</sup>lt;sup>1</sup>The views expressed here are those of the authors and do not necessarily reflect the position of the Federal Reserve Bank of New York or the Federal Reserve System.

#### Motivation

During COVID, both inflation and nominal wage growth surged.

- Question: are wages responding to inflation, or reflect tight labor markets?
- Concern about 1970's style wage-price spiral:

shock to specific sector ightarrow increased wage demands ightarrow generalized inflation

Sticky wage macro models: union wage setting (Erceg et al., 2000; Lorenzoni and Werning, 2023) or ad-hoc real wage rigidity (Gagliardone and Gertler, 2023)

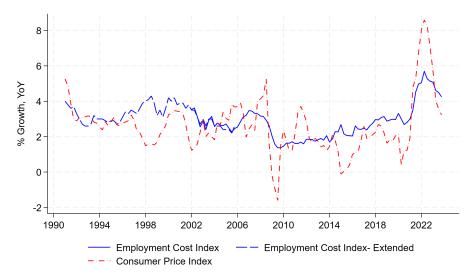
 Micro evidence: wage posting is dominant form of wage determination in the US. (Lachowska et al., 2022; Di Addario et al., 2023)

#### Big Question

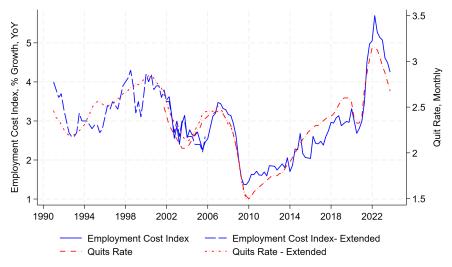
If  $\underline{\text{firms set wages}}$ , how do wages respond to "Cost-of-Living shocks" that raise the price of consumption without affecting labor's marginal product?

• Example: labor intensive services (haircuts), endowment good (food).

# Inflation and wage growth: weak correlation at high frequencies, both surge post-COVID



## Wage growth is tightly correlated with the quit rate



Extends results by, e.g., Faberman and Justiniano (2015) and Moscarini and Postel-Vinay (2017), through COVID shock and recovery.

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### Wage Posting, OTJ Search: Weak Cost of Living → Wages

Firms set (post) wages, and pay to post vacancies.

- Optimal wage setting trades off wage costs and turnover costs.
- Cost-of-living matters for wages only via effects on recruitment/retention.
- E.g., could affect relative value of working vs. unemployment. But:

Workers search on the job, experience workplace preference shocks.

• Firms primarily concerned with job-to-job quits:

On-the-job search dramatically dampens pass-through!

## Consumption $C_t$ : Endowment Good $X_t$ , Services $Y_t$

Perfectly-competitive final good producers bundle  $Y_t$  and  $X_t$  into final consumption:

$$C_{t} = \left(\alpha_{Y}^{\frac{1}{\eta}} Y_{t}^{\frac{\eta-1}{\eta}} + \alpha_{X}^{\frac{1}{\eta}} X_{t}^{\frac{\eta-1}{\eta}}\right)^{\frac{\eta}{\eta-1}},$$
Cost-of-living shock

with price index:

$$P_t = \left(\alpha_Y P_{y,t}^{1-\eta} + \alpha_X P_{x,t}^{1-\eta}\right)^{\frac{1}{1-\eta}}$$

 $X_t$  appears each period:

- All (identical) households receive the same amount
- Competitively & flexibly priced.

 $Y_t$  built from intermediates  $Y_t^j$  by a perfectly-competitive retail firm:

$$Y_t = \left(\int \left(Y_t^j\right)^{\frac{\epsilon-1}{\epsilon}} dj\right)^{\frac{\epsilon}{\epsilon-1}}$$

 $\Rightarrow$  Intermediate producers have price and wage setting power

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#### Households

Maximize the present discounted sum of members' utility,

$$\sum_{t=0}^{\infty} \left(\frac{1}{1+\rho}\right)^t \left[ U_t \ln(C_t^u) + \int_0^{1-U_t} \ln\left(C_t(i,j(i))\right) di \right],$$

choosing unemployment benefits  $C_t^u$  and taxes on the employed, who consume

$$C_t(i,j(i)) = \tau_t \frac{W_{j(i)t}}{P_t}$$

subject to a budget constraint and consumption sharing rule

$$\frac{\bar{C}_t^e}{C_t^u} = \xi > 1,$$

where  $\bar{C}_t^e \equiv \frac{1}{1-U_t} \int_0^{1-U_t} C_t(i,j(i)) di$  (Chodorow-Reich and Karabarbounis, 2016). In a symmetric equilibrium with  $W_{jt} = W_t$ , household optimality requires

$$(C_t)^{-1} = \frac{1}{1+\rho} (1+r_{t,t+1})(C_{t+1})^{-1}.$$

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# Workers' Discrete-Choice Problem: Timing

- **1** Firms post wages  $W_{jt}$  and vacancies  $V_{jt}$
- Fraction s of workers are exogenously separated.
- Total searchers includes some employed workers and all unemployed:

$$\mathcal{S}_t \equiv \lambda_{EE}(1 - U_{t-1}) + U_{t-1}$$

Matches happen; workers choose to accept offers and/or quit: with

• 
$$V_t \equiv \int_0^1 V_{jt} dj$$
,  $\theta_t \equiv \frac{V_t}{S_t}$ .

The probability that:

Searching worker meets a firm's vacancy:

$$f(\theta_t) = \frac{M(V_t, S_t)}{S_t}$$

Searching firms meet a worker:

$$g(\theta_t) = \frac{M(V_t, S_t)}{V_t}$$

• Employed worker can consider quitting to unemployment:  $\lambda_{EU} \in (0,1)$ 

# Workers' Discrete-Choice Problem 2/2

Each worker *i* is **myopic**, making choices to maximize

$$\mathcal{V}_t(i,j) = \underbrace{\ln(C_t(i,j(i)))}_{= \begin{cases} \ln\left(\frac{\tau_t}{P_t}W_{j(i)t}\right), \text{ if employed} \end{cases} } + \underbrace{\iota_{ijt}}_{\text{Matching taste}}$$

$$= \begin{cases} \ln\left(\frac{\tau_t}{P_t}\frac{\bar{W}_t}{\xi}\right), \text{ if unemployed} \end{cases}$$

Where  $\iota_{ijt}$  is Type-1 extreme value with scale parameter  $\gamma^{-1}$  over workplaces drawn each period

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#### Individual Recruiting and Separation Probabilities

The probability a vacancy attracts a matched searcher r() is

$$\underbrace{r_{kj}(W_{kt},W_{jt})}_{\text{Probability } j \text{ poaches} \atop \text{matched worker from } k} = \underbrace{W_{jt}^{\gamma}}_{W_{kt}^{\gamma}+W_{jt}^{\gamma}}, \qquad \underbrace{r_{uj}\left(\frac{\bar{W}_{t}}{\xi},W_{jt}\right)}_{\text{Probability } j \text{ recruits} \atop \text{matched unemployed worker}} = \underbrace{W_{jt}^{\gamma}}_{\left(\frac{\bar{W}_{t}}{\xi}\right)^{\gamma}+W_{jt}^{\gamma}},$$

where recall  $C_t(i,j) = \frac{\tau_t}{P_t} W_{jt}$  and  $C_t^u = \frac{\tau_t}{P_t} \frac{\vec{W}_t}{\xi}$ .

Similarly, separation probabilities s() for a worker matching with an outside job or considering unemployment:

$$\underbrace{s_{jk}\left(W_{jt},W_{kt}\right)}_{\text{Probability } j \text{ loses}} = \frac{W_{kt}^{\gamma}}{W_{kt}^{\gamma}+W_{jt}^{\gamma}}, \qquad \underbrace{s_{ju}\left(W_{jt},\frac{\bar{W}_{t}}{\xi}\right)}_{\text{Probability } j \text{ loses}} = \frac{\left(\frac{\bar{W}_{t}}{\xi}\right)^{\gamma}}{\left(\frac{\bar{W}_{t}}{\xi}\right)^{\gamma}+W_{jt}^{\gamma}},$$

These determine firm j's recruiting and separation rates,  $R(W_{it})$  and  $S(W_{it})$ .

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#### Intermediate Services Firms

Firm j maximizes profits facing Rotemberg (1982) style adjustment costs:

$$\max_{\substack{\{P_{y,t}^{j}\}, \{Y_{t}^{j}\}, \\ \{N_{jt}\}, \{W_{jt}\}, \{V_{t}^{j}\}\}}} \sum_{t=0}^{\infty} \left(\frac{1}{1+\rho}\right)^{t} \left(P_{y,t}^{j} Y_{t}^{j} - W_{jt} N_{jt} - c \left(\frac{V_{jt}}{N_{j,t-1}}\right)^{\chi} V_{jt} W_{t} \right) \\
- \frac{\psi}{2} \left(\frac{P_{y,t}^{j}}{P_{y,t-1}^{j}} - 1\right)^{2} Y_{t}^{j} P_{y,t}^{j} - \frac{\psi^{w}}{2} \left(\frac{W_{jt}}{W_{j,t-1}} - 1\right)^{2} W_{jt} N_{jt} \right)$$

subject to the law of motion on employment:

$$N_{jt} = (1 - S(W_{jt}))N_{j,t-1} + R(W_{jt})V_{jt}.$$

Service firms produce with labor  $(Y_t^j = N_{jt})$  facing CES demand

Close the model with a monetary rule; solve for a symmetric equilibrium

#### Pass-Through in Our Baseline Model See Parameter Choices



To first-order the wage PC is

$$\check{\mathsf{\Pi}}_t^w = \beta_\theta \check{\theta}_t + \beta_U \check{U}_{t-1} + \frac{1}{1+\rho} \check{\mathsf{\Pi}}_{t+1}^w$$

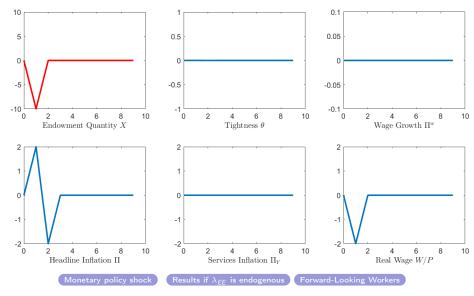
Or, defining quits  $Q_t \equiv S_t - s$ ,

$$\check{\Pi}_t^w = \underbrace{\beta_Q}_{\mathsf{Big!}\ (+)} \check{Q}_t + \underbrace{\beta_U}_{\mathsf{Small!}\ (\approx \, 0)} \check{U}_{t-1} + \frac{1}{1+\rho} \check{\Pi}_{t+1}^w$$

#### Thought Experiment (Cost of Living Shock)

Transitory -10% shock to  $X_t$  and monetary policy stabilizes employment so that  $N_t = 0$ 

#### No Pass-Through in Our Baseline Model:



#### Alter the Model: $P_t \uparrow \Rightarrow$ Unemployment More Attractive

Household now provides inflation-indexed unemployment benefit b:

$$C_t(i,j(i)) = \frac{W_{j(i)t}}{P_t} \times \tau_t$$
$$C_t^U = b \times \tau_t.$$

When  $P_t \uparrow$ , firms must raise  $W_t$  or lose more workers to unemployment. Adds a new term to the wage PC:

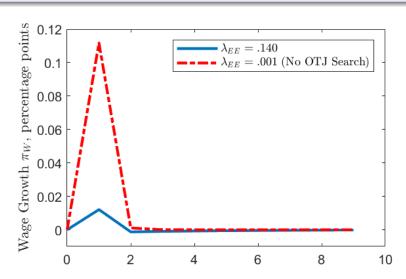
$$\check{\Pi}_{t}^{w} = \beta_{Q} \check{Q}_{t} + \beta_{U} \check{U}_{t-1} + \beta_{\tilde{w}} \check{\tilde{w}}_{t} + \frac{1}{1+\rho} \check{\Pi}_{t+1}^{w}, \tag{1}$$
New "Catch-up" term

Derivation Details

## On-the-Job Search Dramatically Dampens Pass-through

#### Thought Experiment (Cost of Living Shock)

1 Period, 10% drop in quantity of endowment good  $X_t$ 



#### Conclusion

We develop a tractable New Keynesian model with wage-posting firms and on-thejob search consistent with a range of micro evidence, implying that:

- Wage growth is mostly driven by quits, not unemployment.
  - Accords with findings in Heise, Pearce & Weber (2025)
- On-the-job search dampens pass-through of cost of living shocks to wages.
  - Rationalizes Bernanke & Blanchard (2024)'s empirical findings that "catch-up" of wages to prices appears limited
- COVID-era surge in wage growth will revert as labor market tightness reverts

# ${\sf Appendix}$

#### Micro Evidence

#### Model consistent with a range of micro evidence:

- Well-identified evidence on the sensitivity of recruiting and quitting to changes in wages (recruiting & separations elasticities) estimated in monopsony literature: e.g., Manning (2011); Azar et al. (2021); Datta (2023).
- Wage growth predicted by job-to-job transitions: e.g., Faberman & Justiniano (2015); Moscarini & Postel-Vinay (2016); Karahan et al. (2017).
- 3 Wages unresponsive to flow benefit of unemployment (Jäger et al., 2020)
- Wage posting more common than bargaining: current firm wage effects > past wage effects: e.g., Addario et al. (2021)

Back to related literature Back to equilibrium conditions

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#### Simpler, Log-Linear Wage Phillips Curves: Goback

Leveraging the full structure of the model this simplifies to:

$$\check{\mathsf{\Pi}}_t^w = \phi_V \check{\mathsf{V}}_t + \phi_U \check{\mathsf{U}}_{t-1} + \frac{1}{1+\rho} \check{\mathsf{\Pi}}_{t+1}^w \tag{2}$$

With  $\phi_V > 0$  and  $\phi_U < 0$ ; our baseline calibration implies  $\phi_V$  is much larger than  $\phi_{II}$  in magnitude Comparative statics with  $\lambda_{EE}$ 

Let  $Q_t \equiv S_t - s$ , and rewrite (2) as

$$\check{\Pi}_t^w = \beta_Q \check{Q}_t + \beta_U \check{U}_{t-1} + \frac{1}{1+\rho} \check{\Pi}_{t+1}^w \tag{3}$$

With  $\beta_{O} > 0$  and  $\beta_{U}$  positive or negative, depending on the calibration

#### Wage Growth v.s. Labor Market Data, 1990Q4-2023 Goback



$$\ln W_t - \ln W_{t-1} = \hat{\beta}_0 + \hat{\beta}_Q \ln Q_t + \hat{\beta}_U \ln U_{t-1} + \varepsilon_t.$$

VARIABLES	(1) ECI	(2) ECI	(3) ECI	(4) ECI	(5) ECI
In $U_t$	-0.0055***	0.0003	0.0017		
In $Q_t$	(0.0009)	(0.0011) 0.0116***	(0.0012) 0.0119***	0.0116***	0.0116***
III Qt		(0.0020)	(0.0020)	(0.0024)	(0.0016)
In $U_t - In\ U_t^*$		,	,	0.0003	,
				(0.0013)	
In $U_{t-1}$					0.0003
					(8000.0)
Observations	135	135	119	135	135

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

#### Comparing Model to Data Go back

$$\check{\Pi}_t^w = \beta_Q \check{Q}_t + \beta_U \check{U}_{t-1} + \frac{1}{1+\rho} \check{\Pi}_{t+1}^w$$

Source	$eta_{m{Q}}$	$eta_{m{U}}$
Baseline Model: $\chi=1$	0.0246	0.0009
Baseline Model: $\chi = 0$	0.0213	-0.0011
OLS using ECI 1990-Present	0.0116***	0.0003
	(0.0016)	(8000.0)

Standard errors in parentheses (Newey-West; 4 lags) \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

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# Parameters in the Monthly Benchmark New Keynesian Model Go Back

Reason Match EE rates

.036

4.4

.036

4.2

Parameter

 $\lambda_{\it EE}$ 

S

 $\varepsilon_{R,W} - \varepsilon_{S,W}$ 

Value

.14

Meaning

Monthly separation rate

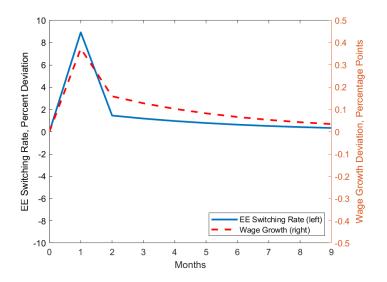
Recruiting-Separation Elasticity

OTJ search probability

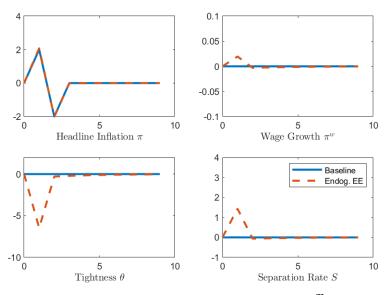
$\lambda_{\it EU}$	.30	Opportunity to quit Match voluntary		ary EU rate, Qiu (2022)			
ξ	2	Consumption ratio: $C_t^e/C_t^u$ See text					
S	.01	Exogenous separation rate	Matcl	Match JOLTS separations			
$\gamma$	6	Variance <sup>-1</sup> of pref. shock Match $\varepsilon_{R,W} - \varepsilon_{S,W}$			$-\varepsilon_{S,W}$		
$\epsilon$	10	EOS of intermediates $Y_{jt}$	nediates $Y_{it}$				
$\psi$	100	Price adjustment cost					
$\psi^{w}$	100	Wage adjustment cost					
$\eta$	1	EOS of $Y_t$ vs. $X_t$	EOS of $Y_t$ vs. $X_t$				
$\alpha_X$	.2	$X_t$ 's share in $C_t$					
$\chi$	1	Convexity of vacancy costs	Bloes	ch and L	_arsen (2023)		
С	30	Hiring cost shifter	Targeting $U$				
ho	.004	Discount Rate	Monthly model				
Selected Model Moments and Data in Steady State							
Moment	Mea	ning	Model	Data	Source		
U	Uner	nployment rate	.044	.044	BLS		

**JOLTS** 

#### Expansionary 1% Decrease in the Policy Rate Go back



### Endogenous labor search intensity Go back



Baseline model, but now assuming:  $\lambda_{\textit{EE},t} = \lambda_{\textit{EE},0} \left( \frac{W_t}{P_t} \right)^{-m}$ 

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#### What if workers are forward-looking? 1/4 Go back

Under commitments, firm j has an incentive to

- Reduce initial wage  $W_{j0}$  at t=0 and commit higher wages  $W_{jt}$  in the future periods  $t \ge 1$ , which helps them recruit
- 2 And then renege in the future

Dynamic inconsistency problem: initial wage  $W_{j0}$  becomes special

• Optimlaity condition for  $W_{j0} \neq$  optimality conditions for  $W_{jt}$  for  $t \geqslant 1$ 

Note: other optimality conditions remain unchanged

# What if workers are forward-looking? 2/4 Go back

Reoptimization at t = 0

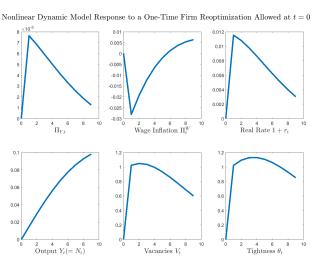


Figure: The effects of allowing firms to reoptimize and choose new paths for wages and all other choice variables, which they then commit to following forever. All impulse responses are shown as percent deviations from the long-run steady state.9

#### What if workers are forward-looking? 3/4 Go back

Dynamic inconsistency issue → 'timeless' solution

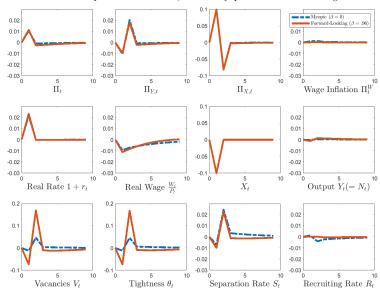
• Only respect the first-order condition for wages for  $t \ge 1$ 

In response to the same cost-of-living shock:

Model with forward-looking workers  $\simeq$  model with myopic workers

# What if workers are forward-looking? 4/4 Go back With Taylor rules

Nonlinear Model Response to an MIT  $X_t$  Shock: Myopic vs. Forward-Looking Workers



#### Households Go back

Maximize the present discounted sum of members' utility,

$$\sum_{t=0}^{\infty} \left( \frac{1}{1+\rho} \right)^t \left[ U_t \ln(C_t^u) + \int_0^{1-U_t} \ln\left(C_t(i,j(i))\right) di \right]. \tag{4}$$

Assumption: household insures unemployed members against inflation, but not employed members

$$C_t(i,j(i)) = \frac{W_{j(i)t}}{P_t}(1+\tau_t)$$
$$C_t^U = b(1+\tau_t).$$

Households choose bonds  $\{B_t\}$ , "top-up"  $\{\tau_t\}$  to maximize (4) subject to the budget constraint:

$$U_t b(1+\tau_t) + (1-U_t) \frac{W_t}{P_t} (1+\tau_t) + \frac{B_t}{P_t} = \frac{D_t}{P_t} + \frac{(1+i_{t-1})B_{t-1}}{P_t} + \int_0^{1-U_t} \frac{W_{j(t)t}}{P_t} di.$$

In a symmetric equilibrium with  $W_{jt} = W_t$ , household optimality requires

$$(C_t)^{-1} = \frac{1}{1+\rho} (1+r_{t,t+1})(C_{t+1})^{-1}$$

# Workers' Discrete-Choice Problem 1/2 Go back

#### Timing:

- **1** At start of period t, firms post wages  $W_{jt}$  and vacancies  $V_{jt}$
- Fraction s of workers are exogenously separated.
- Total searchers includes some employed workers and all the unemployed:

$$S_t \equiv \lambda_{EE}(1 - U_{t-1}) + U_{t-1}$$

- Matches happen; workers choose to accept offers and/or quit: with
  - $V_t \equiv \int_0^1 V_{jt} dj, \ \theta_t \equiv \frac{V_t}{S_t}.$

The probability that:

Searching worker meets a firm's vacancy:

$$f(\theta_t) = \frac{M(V_t, S_t)}{S_t}$$

Searching firms meet a worker:

$$g(\theta_t) = \frac{M(V_t, S)}{V_t}$$

- Employed worker can consider quitting to unemployment:  $\lambda_{\it EU} \in (0,1)$
- $N_t$  is determined; production happens.

# Workers' Discrete-Choice Problem 2/2 Go back



Each worker i is **myopic**, making choices to maximize

$$\mathcal{V}_t(i,j) = \underbrace{\frac{\ln\left(C_t(i,j(i))\right)}{\Pr\left(1+\tau_t\right)}}_{\text{else}} + \underbrace{\frac{\iota_{ijt}}{\Pr\left(1+\tau_t\right)}}_{\text{Matching taste}}$$

$$= \begin{cases} \ln\left(\frac{W_{j(i)t}}{P_t}(1+\tau_t)\right), \text{ if employed} \end{cases}$$

Where  $\iota_{ijt}$  is Type-1 extreme value with scale parameter  $\gamma^{-1}$  over workplaces drawn each period

#### Individual Recruiting and Separation Probabilities Goback



The probability a vacancy attracts a matched searcher r() is

$$\underbrace{r_{kj}(W_{kt},W_{jt})}_{\text{Probability } j \text{ poaches matched worker from } k} = \underbrace{W_{jt}^{\gamma}}_{W_{kt}^{\gamma}}, \qquad \underbrace{r_{uj}\left(b,\frac{W_{jt}}{P_t}\right)}_{\text{Probability } j \text{ recruits matched unemployed worker}} = \underbrace{\left(\frac{W_{jt}}{P_t}\right)'}_{b^{\gamma} + \left(\frac{W_{jt}}{P_t}\right)^{\gamma}},$$

where recall 
$$C_t(i,j) = rac{W_{jt}}{P_t}(1+ au_t)$$
 and  $C_t^u = b(1+ au_t)$ 

Similarly, separation probabilities for a worker matching with an outside job or considering unemployment:

$$\underbrace{s_{jk}\left(W_{jt},W_{kt}\right)}_{\text{Probability $j$ loses}} = \frac{W_{kt}^{\gamma}}{W_{kt}^{\gamma} + W_{jt}^{\gamma}}, \\ \underbrace{s_{ju}\left(\frac{W_{jt}}{P_t},b\right)}_{\text{Probability $j$ loses}} = \frac{b^{\gamma}}{b^{\gamma} + \left(\frac{W_{jt}}{P_t}\right)^{\gamma}}, \\ \underbrace{vorker \text{ matched to $k$}}_{\text{Probability $j$ loses}} = \frac{b^{\gamma}}{b^{\gamma} + \left(\frac{W_{jt}}{P_t}\right)^{\gamma}}, \\ \underbrace{vorker \text{ to unemployment}}_{\text{probability $j$ loses}} = \frac{b^{\gamma}}{b^{\gamma} + \left(\frac{W_{jt}}{P_t}\right)^{\gamma}}, \\ \underbrace{vorker \text{ to unemployment}}_{\text{probability $j$ loses}} = \frac{b^{\gamma}}{b^{\gamma} + \left(\frac{W_{jt}}{P_t}\right)^{\gamma}}, \\ \underbrace{vorker \text{ to unemployment}}_{\text{probability $j$ loses}} = \frac{b^{\gamma}}{b^{\gamma} + \left(\frac{W_{jt}}{P_t}\right)^{\gamma}}, \\ \underbrace{vorker \text{ to unemployment}}_{\text{probability $j$ loses}} = \frac{b^{\gamma}}{b^{\gamma} + \left(\frac{W_{jt}}{P_t}\right)^{\gamma}}, \\ \underbrace{vorker \text{ to unemployment}}_{\text{probability $j$ loses}} = \frac{b^{\gamma}}{b^{\gamma} + \left(\frac{W_{jt}}{P_t}\right)^{\gamma}}, \\ \underbrace{vorker \text{ to unemployment}}_{\text{probability $j$ loses}} = \frac{b^{\gamma}}{b^{\gamma} + \left(\frac{W_{jt}}{P_t}\right)^{\gamma}}, \\ \underbrace{vorker \text{ to unemployment}}_{\text{probability $j$ loses}} = \frac{b^{\gamma}}{b^{\gamma} + \left(\frac{W_{jt}}{P_t}\right)^{\gamma}}, \\ \underbrace{vorker \text{ to unemployment}}_{\text{probability $j$ loses}} = \frac{b^{\gamma}}{b^{\gamma} + \left(\frac{W_{jt}}{P_t}\right)^{\gamma}}, \\ \underbrace{vorker \text{ to unemployment}}_{\text{probability $j$ loses}} = \frac{b^{\gamma}}{b^{\gamma} + \left(\frac{W_{jt}}{P_t}\right)^{\gamma}}, \\ \underbrace{vorker \text{ to unemployment}}_{\text{probability $j$ loses}} = \frac{b^{\gamma}}{b^{\gamma} + \left(\frac{W_{jt}}{P_t}\right)^{\gamma}}, \\ \underbrace{vorker \text{ to unemployment}}_{\text{probability $j$ loses}} = \frac{b^{\gamma}}{b^{\gamma} + \left(\frac{W_{jt}}{P_t}\right)^{\gamma}}, \\ \underbrace{vorker \text{ to unemployment}}_{\text{probability $j$ loses}}_{\text{probability $j$ loses}} = \frac{b^{\gamma}}{b^{\gamma} + \left(\frac{W_{jt}}{P_t}\right)^{\gamma}}, \\ \underbrace{vorker \text{ to unemployment}}_{\text{probability $j$ loses}}_{\text{probability $$$

# Firm's Recruiting and Separation Rates Goback

Define the probability a matched worker is employed or unemployed:

$$\phi_{E,t} \equiv \frac{\lambda_{EE}(1 - U_{t-1})}{\lambda_{EE}(1 - U_{t-1}) + U_{t-1}}$$
$$\phi_{U,t} = 1 - \phi_{E,t}.$$

# Firm's Recruiting and Separation Rates Goback

Define the probability a matched worker is employed or unemployed:

$$\begin{split} \phi_{E,t} &\equiv \frac{\lambda_{EE}(1-U_{t-1})}{\lambda_{EE}(1-U_{t-1})+U_{t-1}} \\ \phi_{U,t} &= 1-\phi_{E,t}. \end{split}$$

Recruiting rate is

$$R(W_{jt}) = g(\theta_t) \left[ \phi_{E,t} \int_k r_{kj}(W_{kt}, W_{jt}) \omega(W_{kt}) dW_{kt} + \phi_{U,t} r_{uj} \left( b, \frac{W_{jt}}{P_t} \right) \right],$$

with  $\omega(W_k)$  some density of wages that search workers currently earn, with an analogous definition for the separation rate  $S(W_i)$ .

$$S(W_{jt}) = s + (1-s) \left[ \lambda_{\textit{EE}} f(\theta_t) \int_k s_{jk}(W_{jt}, W_{kt}) z(W_{kt}) dW_{kt} + \lambda_{\textit{EU}} s_{ju} \left( \frac{W_{jt}}{P_t}, b \right) \right]$$

with  $z(W_{kt})$  endogenous density of outside posted wages

# Firm's Recruiting and Separation Rates Goback

Define the probability a matched worker is employed or unemployed:

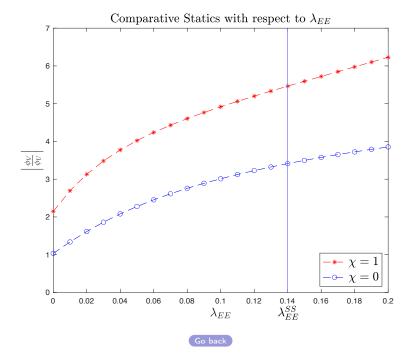
$$\begin{split} \phi_{E,t} &\equiv \frac{\lambda_{EE}(1-U_{t-1})}{\lambda_{EE}(1-U_{t-1})+U_{t-1}} \\ \phi_{U,t} &= 1-\phi_{E,t}. \end{split}$$

In a symmetric equilibrium where  $W_{jt} = W_t \ \forall j, \ R(\cdot)_t \ \text{and} \ S(\cdot)_t$  becomes

$$\begin{split} R_t &= g(\theta_t) \left( \phi_{E,t} \frac{1}{2} + \phi_{U,t} \frac{\left( \frac{W_t}{P_t} \right)^{\gamma}}{\left( \frac{W_t}{P_t} \right)^{\gamma} + b^{\gamma}} \right) \\ S_t &= s + (1 - s) \left( \lambda_{EE} f(\theta_t) \frac{1}{2} + \lambda_{EU} \frac{b^{\gamma}}{\left( \frac{W_t}{P_t} \right)^{\gamma} + b^{\gamma}} \right). \end{split}$$

#### New Calibration with *b* Go back

Parameter	Value	Meaning	Reaso	Reason			
$\lambda_{\it EE}$	.14	OTJ search probability Ma		Match EE rates			
$\lambda_{\it EU}$	.30	Opportunity to quit	Matcl	Match voluntary EU rate, Qiu (2022)			
Ь	0.45	Unemployment Benefit Target U					
5	.01	Exogenous separation rate	ate Match JOLTS separations				
$\gamma$	6	T1EV scale parameter	Matcl	Match $\varepsilon_{R,W} - \varepsilon_{S,W}$			
$\epsilon$	10	EOS of intermediates $Y_{it}$					
$\psi$	100	Price adjustment cost					
$\psi^{\sf w}$	100	Wage adjustment cost					
$\eta$	1	EOS of $Y_t$ vs. $X_t$					
$\alpha_X$	.2	$X_t$ 's share in $C_t$					
$\chi$	1	Convexity of vacancy costs	Bloes	ch and L	arsen (2023)		
C	30	Hiring cost shifter	Targeting $U$ , $S$				
ho	.004	Discount Rate	Monthly model				
Selected Model Moments and Data in Steady State							
Moment	Mear	ning	Model	Data	Source		
U	Unen	Unemployment rate		.044	BLS		
S	Mont	Monthly separation rate		.036	JOLTS		
$\varepsilon_{R,W} - \varepsilon_{S,W}$	Recruiting-Separation Elasticity		4.0	4.2	Bassier et al. (2022)		



#### References I

- Bassier, I., A. Dube, and S. Naidu (2022). Monopsony in Movers: The Elasticity of Labor Supply to Firm Wage Policies. *Journal of Human Resources* 57(S), S50–s86.
- Bloesch, J. and B. Larsen (2023). When do firms profit from wage setting power? Working Paper.
- Erceg, C. J., D. W. Henderson, and A. T. Levin (2000). Optimal monetary policy with staggered wage and price contracts. *Journal of monetary Economics* 46(2), 281–313.
- Faberman, R. J. and A. Justiniano (2015). Job Switching and Wage Growth. *Chicago Fed Letter*.
- Gagliardone, L. and M. Gertler (2023). Oil Prices, Monetary Policy and Inflation Surges. NBER Working Paper 31263.
- Lorenzoni, G. and I. Werning (2023). Wage-Price Spirals. Technical report, National Bureau of Economic Research.

#### References II

Moscarini, G. and F. Postel-Vinay (2017). The Relative Power of Employment-to-Employment Reallocation and Unemployment Exits in Predicting Wage Growth. *American Economic Review 107*(5), 364–368.

Qiu, X. (2022). Vacant Jobs. Working Paper.

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