# Discussion of “Waiting to Hire and Unemployment Crises"

By Antonova, Challe, and Matvieiev (2026)

Seung Joo Lee
University of Oxford

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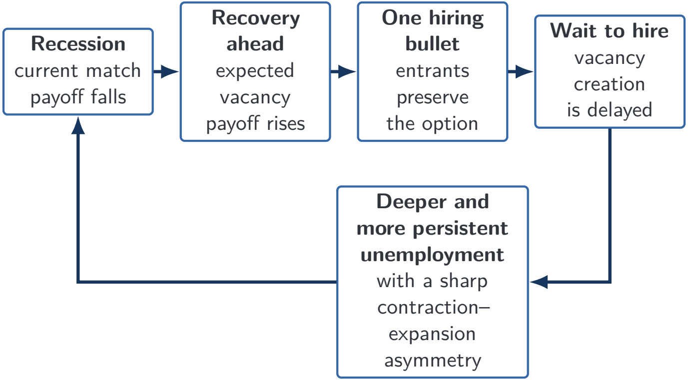
## The paper in one diagram

A very nice paper, with a sharp mechanism and many applications.




- The mechanism needs neither uncertainty nor time-varying discounting. It disappears under free entry because the net value of a vacancy is always zero.

# What the paper finds

### $\sim 6\times$ Amplification
Unemployment responds about 6 times more strongly than in the constrained-efficient allocation.

### Asymmetry
Firms wait after negative shocks when a recovery is expected.

### Monetary Policy
Overheating (higher-than-target inflation): profits$\uparrow$ now $\Longrightarrow$ value of waiting$\downarrow$.

- Efficient unemployment peaks only 0.06% points after a 1% productivity decline.
- Strict inflation targeting implements the flexible-price allocation, which is inefficient with waiting.
- Asymmetric optimal monetary policy—price stability with positive shocks and temporary inflation with negative shocks.
- Efficient wages, so neither unemployment nor policy works through wage-setting distortions.

# Source of inefficiency: a vacancy-timing externality

The inefficiency survives under flexible prices and efficient wages.

**What the individual firm misses**

The firm takes aggregate filling and job-finding rates as given. When it waits, it does not internalize:

- The current job-finding benefit of an additional vacancy,
- Higher employment, output, and consumption at the trough,
- Faster aggregate matching and employment recovery.

**Efficient wages?**

The efficient wage aligns the private marginal entrant with the planner's entry cutoff.

- The waiting option adds a new *intertemporal* stopping condition that the efficient wage path does not decentralize.

# Two policies to reduce the waiting wedge

$$\Omega_0 = \beta\left(\underbrace{qJ_1 - \chi}_{N_1 \equiv \text{future surplus}}\right) - \left(\underbrace{qJ_0 - \chi}_{N_0 \equiv \text{current surplus}}\right) > 0.$$

**Targeted vacancy subsidy**

$$\Omega(s_0, s_1) = \Omega_0 - s_0 + \beta s_1.$$

- Current support $s_0$ raises the vacancy payoff.
- Future support $s_1$ encourages delay.
- Pigouvian: $s_0 \simeq$ omitted social benefit.

**Dovish monetary policy**

$$\Omega(\pi) = \Omega_0 - d\pi, \qquad d = q(a - \beta b).$$

- $a\pi \simeq \Delta J_0$; $b\pi \simeq \Delta J_1$.
- Policy reduces waiting only if $a > \beta b$.
- Raises trough profits and flattens recovery.

Timing: support must favor hiring now, not promise a future rescue.

- In theory, the optimal policy $\simeq$ a combination of these two policies.

## Does waiting survive when a firm can post many vacancies?

With convex posting costs, the firm solves

$$\max_{v_0, v_1 \geq 0} \; N_0 v_0 - \frac{\gamma}{2} v_0^2 + \beta \left( N_1 v_1 - \frac{\gamma}{2} v_1^2 \right).$$

**No hiring constraint**:

$$v_0 = \left[ \frac{N_0}{\gamma} \right]_+, \qquad v_1 = \left[ \frac{N_1}{\gamma} \right]_+.$$

The choices are independent: posting today does not use tomorrow's hiring slot.

**Scarce intertemporal hiring capacity**: If $v_0 + v_1 \leq K$ binds,

$$v_0^* = \frac{N_0 - \beta N_1 + \beta \gamma K}{\gamma(1+\beta)}, \qquad \frac{\partial v_0^*}{\partial(\beta N_1 - N_0)} = -\frac{1}{\gamma(1+\beta)} < 0.$$

- Conditional on binding, expected recovery shifts hiring capacity into the future.

# Empirical problem: delay or destruction?

A negative supply shock can reduce vacancies through two different margins:

$$\underbrace{N_0\downarrow}_{\substack{\text{lower value}\\ \text{of posting now}}} \qquad \text{or} \qquad \underbrace{\Omega_0 = \beta N_1 - N_0\uparrow}_{\substack{\text{greater incentive}\\ \text{to postpone}}}.$$

## Observed vacancies combine both margins

- A vacancy that disappears today may have been cancelled or merely deferred.
- Shock persistence does not separate these two cases because it changes both $N_0$ and $N_1$.
- Switching the waiting option off isolates its amplification effect on unemployment *within the model*.

## Empirics?

- Empirical identification requires observing the hiring opportunity before the vacancy is posted.

# Potential empirical design: follow approved requisitions

The empirical counterpart can be an approved job requisition that has not yet been posted:

$$\text{Approval} \implies \text{Posting, Pause, Cancellation, Reopening, or Hire.}$$

For requisition $r$, measure

$$\text{PostingDelay}_r = \text{PostingDate}_r - \text{ApprovalDate}_r$$

and estimate its posting hazard after an externally identified supply shock.

- Destroyed demand: the approved position is cancelled and never reappears.
- Waiting: the same position remains authorized and is posted or reopened later.
- Validation: paused requisitions display subsequent posting and hiring catch-up.

# Potential empirical design: recovery news and ability to postpone

Let $A_i$ be high when an unused authorization survives and hiring capacity is likely to bind.

$$F_{it} \equiv \frac{\text{vacancies posted now}}{\text{vacancies posted now} + \text{approved future openings}},$$

for firms with positive total planned openings, and estimate

$$F_{it} = \alpha_i + \delta_t + \beta E_i L_t + \theta E_i S_t + \kappa E_i S_t A_i + X_{it}' \Gamma + \varepsilon_{it}.$$

$E_i$ is pre-shock oil exposure, $L_t$ is the oil price surprise, and $S_t$ is futures-implied recovery news residualized with respect to $L_t$.

- $\theta$: benchmark recovery-news effect for low-$A_i$ firms, including any change in current profitability and continuation value.
- $\kappa < 0$: firms able to preserve and postpone the opportunity post a smaller share now, followed by later catch-up.

Some threats: $A_i$ may also proxy for financing, demand sensitivity, or input substitution.

# My question: does an oil shock activate the option?

Oil input cost rises

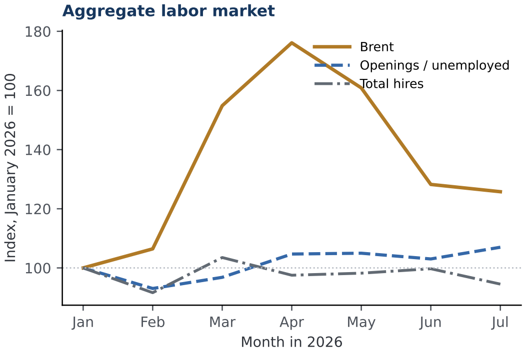
Current match surplus $J_0$ falls

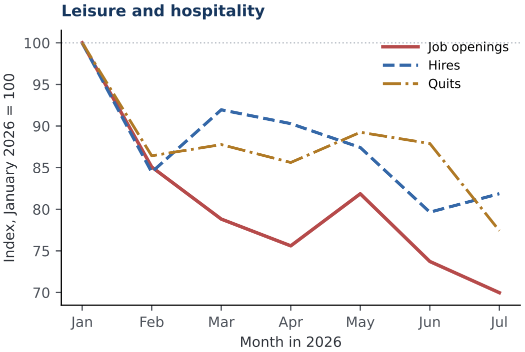
Expected recovery raises $J_1 - J_0$

Vacancy posting waits

- The oil shock is a sectorally heterogeneous input-cost shock.
- Input expenditure switching, monetary policy, wages, and the expected oil path jointly determine $J_t$.
- If inflation passes weakly into nominal wages, a real-wage decline can cushion the trough in match surplus and reduce the incentive to wait.

# The 2026 experience?

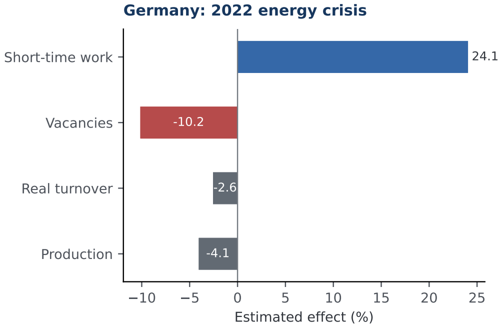


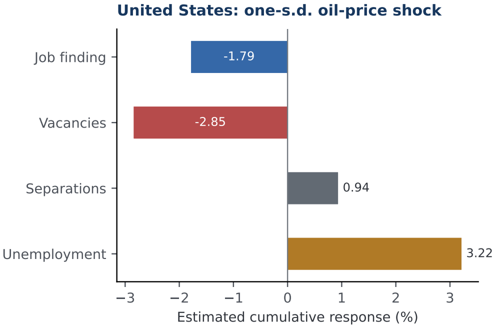




Brent: +76% at the April peak; +26% in July Aggregate tightness: +7% by July Leisure openings: −30% by July

Source: FRED monthly series through July 2026. All lines are indexed to January 2026.

# Oil shocks reduce vacancies, but why?




Hutter and Weber (2023): the German energy crisis effect from sectoral energy intensity.

Ordóñez, Sala, and Silva (2010): U.S. responses to a one-standard-deviation real-oil-price shock.

Neither separates the direct general-equilibrium contraction in labor demand from additional amplification caused by the option to wait.

Appendix

# A hiring option with an oil shock

$$J_t = p_t y_t - p_t^o m_t - w_t + \beta(1-\lambda)J_{t+1}.$$

This is the same match surplus as in the earlier framework,

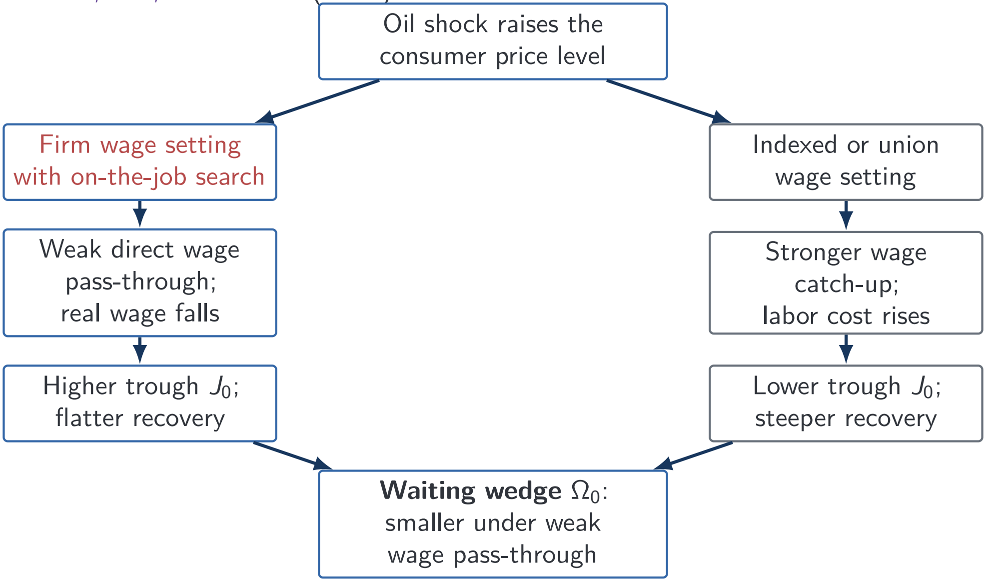
$$N_0 = qJ_0 - \chi, \qquad N_1 = qJ_1 - \chi, \qquad \Omega_0 = \beta N_1 - N_0.$$

These objects move waiting only by changing the path of $\{J_t\}_{t=0}^{\infty}$.

- Oil persistence ($\sim p_t^o$) shapes the path of input costs.
- Wage setting ($\sim w_t$) shapes the trough and the rebound in $J_t$.
- Relative prices and quantities ($\sim p_t$, $y_t$) can also move, including through demand.

## Weak (nominal) wage pass-through can mute amplification due to the waiting option

From Bloesch, Lee, and Weber (2026).



## Takeaways

1. "Waiting to Hire" is a powerful amplification device. Entrants postpone vacancies when hiring payoffs are expected to recover, producing deep, persistent, and asymmetric unemployment.

   —Various stabilization policies can correct the vacancy-timing externality and mute amplification.

2. Empirics must isolate delay from destruction. Observed vacancies mix cancelled demand with postponed hiring, and shock persistence alone cannot separate $N_0$ from $\Omega_0$.

   —The proposed empirical design follows approved requisitions, and recovery news among firms able to wait.

3. Wage setting still can be a factor. Weak nominal wage pass-through from a negative supply shock can cushion trough surplus, flatten its expected recovery, and dampen the waiting option.

# Appendix

# Appendix: optimal policy under a welfare criterion

Let the residual waiting wedge be

$$R(s,\pi) = \Omega_0 - s - d\pi.$$

Consider

$$\mathcal{L}(s,\pi) = \underbrace{\frac{\lambda}{2}R(s,\pi)^2}_{\text{waiting loss}} + \underbrace{\frac{\kappa_s}{2}s^2}_{\text{subsidy cost}} + \underbrace{\frac{\kappa_\pi}{2}\pi^2}_{\text{inflation cost}}.$$

The unique interior optimum satisfies

$$R^* = \frac{\Omega_0}{1 + \frac{\lambda}{\kappa_s} + \lambda\frac{d^2}{\kappa_\pi}}, \qquad s^* = \frac{\lambda}{\kappa_s}R^*, \qquad \pi^* = \frac{\lambda d}{\kappa_\pi}R^*.$$

- Use more subsidy ($s^*\uparrow$) when targeted support is cheap: low $\kappa_s$.
- Use more inflation ($\pi^*\uparrow$) under a low $\kappa_\pi$.
- With costly instruments, policy generally reduces rather than eliminates waiting.

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# Appendix: first-order conditions

Let

$$R(s,\pi) = \Omega_0 - s - d\pi, \qquad \mathcal{L}(s,\pi) = \frac{\lambda}{2}R(s,\pi)^2 + \frac{\kappa_s}{2}s^2 + \frac{\kappa_\pi}{2}\pi^2,$$

where $\lambda, \kappa_s, \kappa_\pi > 0$. Since

$$\frac{\partial R}{\partial s} = -1, \qquad \frac{\partial R}{\partial \pi} = -d,$$

the chain rule gives

$$\frac{\partial \mathcal{L}}{\partial s} = \lambda R \frac{\partial R}{\partial s} + \kappa_s s = -\lambda R + \kappa_s s = 0,$$
$$\frac{\partial \mathcal{L}}{\partial \pi} = \lambda R \frac{\partial R}{\partial \pi} + \kappa_\pi \pi = -\lambda d R + \kappa_\pi \pi = 0.$$

Thus the first-order conditions are

$$s = \frac{\lambda}{\kappa_s}R, \qquad \pi = \frac{\lambda d}{\kappa_\pi}R.$$

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# Appendix: why the first-order conditions are sufficient

The Hessian is

$$\nabla^2\mathcal{L} = \begin{pmatrix} \lambda + \kappa_s & \lambda d \\ \lambda d & \lambda d^2 + \kappa_\pi \end{pmatrix}.$$

Its first leading minor is positive and its determinant is $\lambda\kappa_\pi + \lambda\kappa_s d^2 + \kappa_s\kappa_\pi > 0$.

- Hence the objective function is strictly convex and the first-order conditions identify its unique global minimizer.

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# Appendix: solving the first-order conditions

Substitute the two first-order conditions back into the definition of the residual wedge:

$$\begin{aligned} R &= \Omega_0 - s - d\pi \\ &= \Omega_0 - \frac{\lambda}{\kappa_s} R - \frac{\lambda d^2}{\kappa_\pi} R. \end{aligned}$$

Collecting the terms in $R$ gives

$$\underbrace{\left(1 + \frac{\lambda}{\kappa_s} + \frac{\lambda d^2}{\kappa_\pi}\right)}_{\equiv D} R = \Omega_0.$$

Therefore

$$\begin{aligned} R^* &= \frac{\Omega_0}{D}, \\ s^* &= \frac{\lambda}{\kappa_s} R^* = \frac{\lambda \Omega_0}{\kappa_s D}, \\ \pi^* &= \frac{\lambda d}{\kappa_\pi} R^* = \frac{\lambda d \Omega_0}{\kappa_\pi D}. \end{aligned}$$

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## Appendix: minimized loss and instrument shares

At the optimum,

$$\begin{aligned}
\mathcal{L}^* &= \frac{\lambda}{2}(R^*)^2 + \frac{\kappa_s}{2}\left(\frac{\lambda}{\kappa_s}R^*\right)^2 + \frac{\kappa_\pi}{2}\left(\frac{\lambda d}{\kappa_\pi}R^*\right)^2 \\
&= \frac{\lambda}{2}(R^*)^2\left(1 + \frac{\lambda}{\kappa_s} + \frac{\lambda d^2}{\kappa_\pi}\right) \\
&= \frac{\lambda \Omega_0^2}{2D}.
\end{aligned}$$

The two instruments' contributions to wedge reduction satisfy

$$\frac{s^*}{d\pi^*} = \frac{\kappa_\pi}{\kappa_s d^2}.$$

- The instrument with the lower cost per unit of wedge reduction receives more weight.

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## Appendix: exact elimination of the waiting wedge

Suppose we must impose $R = 0$ (i.e., no waiting). Then, the optimal policy solves:

$$\min_{s,\pi} \frac{\kappa_s}{2}s^2 + \frac{\kappa_\pi}{2}\pi^2 \quad \text{subject to} \quad s + d\pi = \Omega_0.$$

With multiplier $\mu$, the Lagrangian is

$$\mathcal{A}(s,\pi,\mu) = \frac{\kappa_s}{2}s^2 + \frac{\kappa_\pi}{2}\pi^2 + \mu(\Omega_0 - s - d\pi).$$

The first-order conditions are

$$\kappa_s s - \mu = 0, \qquad \kappa_\pi \pi - \mu d = 0, \qquad \Omega_0 - s - d\pi = 0.$$

Thus

$$s = \frac{\mu}{\kappa_s}, \qquad \pi = \frac{\mu d}{\kappa_\pi},$$

and the constraint implies

$$\mu^* = \frac{\Omega_0}{\frac{1}{\kappa_s} + \frac{d^2}{\kappa_\pi}}.$$

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# Appendix: exact-implementation solution

The constrained first-order conditions imply

$$s = \frac{\mu}{\kappa_s}, \qquad \pi = \frac{\mu d}{\kappa_\pi}, \qquad \mu^* = \frac{\Omega_0}{\frac{1}{\kappa_s} + \frac{d^2}{\kappa_\pi}}.$$

Consequently,

$$s^E = \frac{\kappa_\pi}{\kappa_\pi + \kappa_s d^2}\Omega_0, \qquad \pi^E = \frac{\kappa_s d}{\kappa_\pi + \kappa_s d^2}\Omega_0.$$

- The minimum exact-implementation cost is given by

$$C^E = \frac{\kappa_s \kappa_\pi}{2(\kappa_\pi + \kappa_s d^2)}\Omega_0^2.$$

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# Appendix: evidence

### Hutter and Weber (2023)

- The 2022 European energy crisis after Russia's invasion of Ukraine.
- Sectoral panel using pre-existing energy intensity as the treatment bite.

### Ordóñez, Sala, and Silva (2010)

- U.S. quarterly series, 1957Q1–2003Q3.
- Design: nonlinear multivariate system; IRFs to a one-standard-deviation, one-off increase in the real oil price. $+0.94\%$.

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