

Discussion:  
“Efficient Search on the Job and the Business Cycle”  
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# Efficient Search on the Job and the Business Cycle

by Guido Menzio and Shouyong Shi

- Search model with *wage posting* and *directed search*
  - ▶ ‘Competitive’ search: allocation is efficient
  - ▶ Equivalent to ‘standard’ model under Hosios condition
- Two new elements
  - ▶ Endogenous job destruction
  - ▶ Search on the job
    - ★ Unemployed search easy-to-find, low wage jobs
    - ★ Employed search harder-to-find, high wage jobs
- Calibrate and simulate
  - ▶ Business cycles driven by changes in labor productivity
  - ▶ Re-visit the unemployment volatility puzzle (Shimer)

## Conclusions of the paper

- 1 “in order to understand the behavior of unemployment and vacancies over the business cycle, an economist needs a model, in which not only the UE, but also the EU and EE rates are endogenous.”
- 2 Such a model is not hard to solve
  - ▶ Recursive equilibrium exists and is unique
  - ▶ Wage distribution does not affect aggregate allocation
- 3 Endogenous JD and SOJ solves Costain-Reiter-Shimer puzzle
  - ▶ Explains 40% volatility hiring (UE rate), 100% separation (EU rate)
  - ▶ Explains 80% fluctuations in unemployment
- 4 “aggregate productivity shocks may well be the fundamental cause of labor market volatility in the postwar US.”

# Outline of the discussion

- Standard search model
  - ▶ Unemployment fluctuations
  - ▶ Response of the hiring rate to productivity shocks
  - ▶ Possible solutions to the unemployment volatility puzzle
- Intuition for the Menzio-Shi result
- Some comments

# Standard search model

- Unemployment fluctuations

$$\hat{u} = u - p(\theta(y))u + \delta(1 - u)$$

- ▶ Separation rate is constant
- ▶ Single search market (homogeneous workers)

- Vacancy creation

$$k = q(\theta(y)) [V(y) - x]$$

- Wage determination

- ▶ Workers' search decisions
- ▶ Contractual environment

# Unemployment volatility puzzle

- Vacancy creation

$$k = q(\theta(y)) [V(y) - x]$$

- ▶ Matching technology

$$p(\theta(y)) = \theta(y) q(\theta(y)) = (\theta(y))^\gamma$$

- Response to productivity shocks

$$\frac{d \log p(\theta(y))}{d \log y} = \frac{\gamma}{1 - \gamma} \left[ \frac{V(y)}{V(y) - x} - \frac{x}{V(y) - x} \frac{d \log x}{d \log y} \right]$$

- ▶ With flexible wages (Haefke, Sonntag and van Rens 2008)

$$\frac{d \log p(\theta(y))}{d \log y} = \frac{\gamma}{1 - \gamma} \leq 1 \ll 7.56$$

# Unemployment volatility puzzle: solutions

- Unemployment fluctuations

$$\hat{u} = u - p(\theta(y)) u + \delta(1 - u)$$

- Response to productivity shocks

$$\frac{d \log p(\theta(y))}{d \log y} = \frac{\gamma}{1 - \gamma}$$

- Solutions:

- 1 Fluctuations in  $\delta$
- 2 Larger shocks
- 3 Higher  $\gamma$

# Menzio-Shi model

- Unemployment fluctuations (endogenous JD)

$$\hat{u} = u - p(\theta(y))u + \delta(1 - u)$$

$$\hat{u} = u - p(\theta(x_u; y))u + \sum_i d(z_i; y)g(z_i)$$

$$d(z_i; y) = 1 \text{ if } z_i < z_R(y), \delta \text{ otherwise}$$

- Vacancy creation (search on the job)

$$k = q(\theta(y)) [V(y) - x]$$

$$k = q(\theta(x; y)) \left[ \sum_i V(z_i; y) f(z_i) - x \right] \text{ for all } x$$

- Delivers:

- 1 Fluctuations in  $\delta$
- 2 Larger shocks ( $y \uparrow \Rightarrow z_R \uparrow \Rightarrow apl \uparrow$  by less)
- 3 Higher  $\gamma$  ( $\gamma = \frac{d \log h^{ue}}{d \log \theta_u} = \frac{d \log h^{ue}}{d \log \bar{\theta}} \frac{d \log \bar{\theta}}{d \log \theta_u}$ )



## 'All of the above' approach

- Endogenous job destruction
  - ▶ Direct contribution (up to 50% volatility unemployment)
  - ▶ 12% larger shocks
- Search on the job:  $\gamma = 0.65 > 0.22$ 
  - ▶  $h^{ue}$  response 6 times larger (simulations: 4 times)
- Calibration other parameters
  - ▶  $\frac{b}{y + \sum_i z_i g(z_i)} = 0.71 > 0.4$

# Comments

- What matters most quantitatively?
- Testing the mechanism
  - ▶ Match volatility  $h^{eu}$
  - ▶ Overpredict volatility  $h^{ee}$  (200%)
  - ▶ Underpredict volatility vacancies (30%) and  $h^{ue}$  (40%)
- Does a non-recursive equilibrium exist?
- Do these results merit the conclusion that aggregate productivity shocks are the fundamental cause of labor market volatility?

# Conclusions

- Point out important mechanisms
- Show convincingly they matter quantitatively
- Could be more careful in analyzing what matters quantitatively
- Direct evidence for the mechanism