Discussion:
“Efficient Search on the Job and the Business Cycle”
by Guido Menzio and Shouyong Shi

Thijs van Rens
CREI and Universitat Pompeu Fabra

Vienna Macro Workshop

October 18, 2008
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)
  
  \[ \frac{d \log p(\theta(y))}{d \log y} = \frac{\gamma}{1 - \gamma} \leq 1 << 7.56 \]
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 ($y \uparrow \Rightarrow z_R \uparrow \Rightarrow \text{apl} \uparrow \text{ by less}$)
3. Higher $\gamma$ \[ \gamma = \frac{d \log h^{ue}}{d \log \theta_u} = \frac{d \log h^{ue}}{d \log \theta} \frac{d \log \bar{\theta}}{d \log \theta_u} \]
‘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