The Cyclical Behavior of Labor Markets

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Outline

- Develop six facts to guide theoretical models.
- Discuss the quantitative failures of existing models.
- Highlight recent research that promises to overcome these failures.
Relevant Papers


- “Reassessing the Ins and Outs of Unemployment,” 2005.

- Work by Robert Hall and many others.
Relevant Papers


• “Reassessing the Ins and Outs of Unemployment,” 2005.

• Work by Robert Hall and many others.

• Data are available at [http://home.uchicago.edu/~shimer/data/](http://home.uchicago.edu/~shimer/data/)
The Job Finding Rate

- Goal: Measure the job finding rate using readily available data.

- $U_t$ is the number of unemployed workers in month $t$.

- $E_t$ is the number of employed workers in month $t$.

- $U_t^s$ is the number unemployed for less than one month in month $t$. 
The Job Finding Rate

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• $E_t$ is the number of employed workers in month $t$.

• $U^s_t$ is the number unemployed for less than one month in month $t$.

• I use these to construct two variables:
  
  ◦ The unemployment rate in month $t$ is $\frac{U_t}{U_t + E_t}$.
  
  ◦ The job finding rate is $f_t$ solving $\exp(-f_t) = \frac{U_{t+1} - U^s_{t+1}}{U_t}$. 
Job Finding Rate
Fact 1

The correlation between the cyclical components of the job finding and unemployment rates is $-0.97$. 
The Separation Rate

- Goal: Construct an analogous measure of the separation rate.
- Suppose we know $U_t$, $E_t$, and $f_t$.
- Then the separation rate must solve $U_{t+1} - U_t = E_t s_t - U_t f_t$. 
Fact 2

The correlation between the cyclical components of the separation and unemployment rates is 0.65.
In Steady State $E_t s_t = U_t f_t$.

Compare $u_t \equiv \frac{U_t}{U_t + E_t}$ with $\frac{s_t}{s_t + f_t}$. 
Unemployment Rate

- $u_t$
- $\frac{s_t}{s_t + f_t}$
Fact 3

Unemployment is Always in Steady State.
The Effect of $f_t$ and $s_t$ on Unemployment

Compare $\frac{s_t}{s_t + f_t}$ with $\frac{s_t}{s_t + f}$ and $\frac{\bar{s}}{\bar{s} + f_t}$. 
Unemployment Rate

\[ \frac{s_t}{s_t + f_t} \]
The Job Finding Rate Accounts for 79% of Unemployment Fluctuations.
The Job Finding Rate Accounts for 95% of Unemployment Fluctuations since 1985.
What Causes Job Finding Rate Fluctuations?

Pissarides (1985) posits a stable, CRS matching function \( m(u, v) \).
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$$f_t = \frac{m(u_t, v_t)}{u_t} = m(1, \theta_t), \text{ where } \theta_t = \frac{v_t}{u_t}.$$
What Causes Job Finding Rate Fluctuations?

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Measure $v_t$ as the Conference Board Help-Wanted Advertising Index.
Fact 5

The correlation between the cyclical components of the job finding rate and v-u ratio is 0.96.
Vacancies Drive the Unemployment Rate

Construct $\tilde{u}_{t+1} = \tilde{u}_t + (1 - \tilde{u}_t)\bar{s} - m(\tilde{u}_t, \nu_t)$.
Vacancies Drive the Unemployment Rate

Construct $\tilde{u}_{t+1} = \tilde{u}_t + (1 - \tilde{u}_t)\bar{s} - m(\tilde{u}_t, v_t)$.

$m(\tilde{u}_t, v_t) = 0.017\tilde{u}_t^{0.5}v_t^{0.5}$.
Unemployment Rate

$u_t$
Unemployment Rate

$\tilde{u}_t$
Unemployment Rate

$u_t$ $\tilde{u}_t$
Unemployment Rate—Deviation from Trend

$u_t$
Unemployment Rate—Deviation from Trend

- $u_t$
- $\tilde{u}_t$
To explain fluctuations in unemployment, we need to explain fluctuations in vacancies.
Benchmark Model

- Pissarides (1985) with productivity ($p$) shocks.
- Risk neutral workers supply labor inelastically.
- Profit maximizing firms use a technology that is linear in labor.
- If profitable, they create vacancies to recruit workers.
- The firm keeps a fraction $1 - \beta$ of the value of match surplus.
- There are shocks to the productivity of all jobs.
Benchmark Model

- Recursive equation for the value of match surplus:

\[ rV(p) = p - (z + f(\theta(p))\beta V(p)) - sV(p) + \lambda(\mathbb{E}(V(p')|p) - V(p)). \]
Benchmark Model

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- Free entry condition for vacancies:

\[ c = \frac{f(\theta(p))}{\theta(p)} (1 - \beta)V(p). \]
Benchmark Model

Standard Deviations

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<td>Log V-U Ratio</td>
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Critical assumption: $z = 0.4\bar{p}$. 
How Can the Benchmark Model Be Fixed?

- Make wages more rigid
  - This definitely makes the v-u ratio more volatile.
How Can the Benchmark Model Be Fixed?

- Make wages more rigid
  - This definitely makes the v-u ratio more volatile.

- But are wages too flexible in the benchmark model?
  - Look at data on real output and compensation per worker.
Log output per worker
Index

Log compensation per worker

Log output per worker

How Can the Benchmark Model Be Fixed?

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†Assumes wages are bargained only in new matches.
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    - Wage smoothing restricted by limited commitment.
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  - On-the-job search.
  - Asymmetric Information.
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