HIGH DISCOUNTS AND HIGH UNEMPLOYMENT

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Economic Fluctuations and Growth Meeting

National Bureau of Economic Research

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Recessions

Stock market: Price falls more than earnings, meaning discounts rise
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All types of investment fall, including job creation
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All types of investment fall, including job creation

DMP model: Present value of margin between productivity and wage (job value, $J$) is the driving force of labor-market tightness and unemployment
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All types of investment fall, including job creation

DMP model: Present value of margin between productivity and wage (job value, $J$) is the driving force of labor-market tightness and unemployment

The rise in discounts is easily enough to explain observed large variations in unemployment, even with Nash wage bargaining.
EXISTING RESEARCH ON DISCOUNTS AND UNEMPLOYMENT VOLATILITY

- CAPM expected returns as discounts in the PV of the employer’s share of surplus: Yashiv (2000)
- Labor market amplification of productivity shocks as a source of discount vol: Kuehn, Petrosky-Nadeau, and Zhang (2013)
- Joint movements of job value and stock market assuming corps own only plant, equipment, and employment relationships: Merz and Yashiv (2007)
The DMP model makes the job value directly observable, because it is proportional to the expected duration of a vacancy, a number available from JOLTS.
Key new ideas

The DMP model makes the job value directly observable, because it is proportional to the expected duration of a vacancy, a number available from JOLTS.

Capture the high cyclical volatility of discounts.
**Zero-profit condition**

\[ \kappa + c \frac{V}{H} \]
**Zero-profit condition**

\[ \kappa + c \frac{V}{H} \]

\[ \kappa + cT = \bar{J} \]
**Zero-profit condition**

\[
\kappa + c \frac{V}{H} = \bar{J}
\]

\[
\kappa + cT = J
\]
Zero-profit condition

\[ \kappa + c \frac{V}{H} \]
\[ \kappa + cT = \bar{J} \]
\[ cT = J \]
\[ J = \nabla(x - w) \]
Aggregate Job Value, 2001 through 2013
Job Value from JOLTS and Wilshire Stock-Market Index
Stock-market pricing model

\[ 1 = \sum_{i'} \pi_{i,i'} m_{i,i'} \frac{P_{i'} + y_{i'}}{P_i} \]
Stock-market pricing model

\[ 1 = \sum_{i'} \pi_{i,i'} m_{i,i'} \frac{P_{i'} + y_{i'}}{P_i} \]

32 unknown \( m_{i,i'} \)s; 9 pricing conditions
Stock-market pricing model

\[ 1 = \sum_{i'} \pi_{i,i'} m_{i,i'} \frac{P_{i'} + y_{i'}}{P_i} \]

32 unknown \( m_{i,i'} \)s; 9 pricing conditions

Bayesian regression with very slightly informative prior centered on 1
Definitions of Categories of the Stock Price and Corporate Profits

<table>
<thead>
<tr>
<th></th>
<th>Deflated detrended Wilshire stock-market index</th>
<th>Deflated detrended corporate profits, billions of 2005 dollars</th>
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<td>130</td>
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<td>H</td>
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<td>153</td>
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## Stochastic Discount Factor Inferred from the Stock Market

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<th>Origin</th>
<th>P</th>
<th>y</th>
<th>L</th>
<th>M</th>
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<th>L</th>
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<th>H</th>
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<td>0.99</td>
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</table>
Present value

\[ V_i = \mathbb{E}_{i'|i} m_{i',i} y_{i'} \]
Discount factors and rates

\[ V_i = D_i \bar{y}_i \]
Discount factors and rates

\[ V_i = D_i \bar{y}_i \]

\[ d_i = \frac{1}{D_i} - 1. \]
## Discount Factors and Rates

<table>
<thead>
<tr>
<th>State</th>
<th>P category</th>
<th>y category</th>
<th>Quarterly discount factor</th>
<th>Annual discount rate, percent</th>
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<tr>
<td>Mean</td>
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<td>0.95</td>
<td>24</td>
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</table>
Discounting job-value flows

\[ \hat{J}_i = (1 - s) \sum_{i'} \pi_{i,i'} m_{i,i'} (J_{i'} + y_{i'}) \]
Discounting job-value flows

\[
\hat{J}_i = (1 - s) \sum_{i'} \pi_{i,i'} m_{i,i'} (J_{i'} + y_{i'})
\]

\[
J_i = \alpha + \gamma \hat{J}_i + \epsilon_i
\]
Discounting job-value flows

\[ \hat{J}_i = (1 - s) \sum_{i'} \pi_{i,i'} m_{i,i'} (J_{i'} + y_{i'}) \]

\[ J_i = \alpha + \gamma \hat{J}_i + \epsilon_i \]

\[ \alpha = $661 ($87) \]
Discounting job-value flows

\[ \hat{J}_i = (1 - s) \sum_{i'} \pi_{i,i'} m_{i,i'} (J_{i'} + y_{i'}) \]

\[ J_i = \alpha + \gamma \hat{J}_i + \epsilon_i \]

\[ \alpha = \$661 \ (\$87) \]

\[ \gamma = 1.305 \ (0.375) \]
Actual and Fitted Job Values

<table>
<thead>
<tr>
<th>State</th>
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<th>Actual job value</th>
<th>Fitted job value</th>
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Research in progress

What fraction of the observed cyclical volatility of unemployment do variations in $J$ account for?
Research in progress

What fraction of the observed cyclical volatility of unemployment do variations in $J$ account for?

Requires understanding of the decline in matching efficiency that started in 2009.