Discussion of “Risk, Unemployment, and the Stock Market: A Rare-Event-Based Explanation of Labor Market Volatility”

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WFA
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OVERVIEW

- Combines two distinct research programs:
  2. Time-varying rare disaster risk as the shock driving variations in equity premia: Rietz (1988); Barro (2006); Gabaix (2012); Gourio (2012); Wachter (2013).

- Exposition is really clear.

- Quantitative success.

- Bottom line I: if time-varying rare disaster risks are salient for asset pricing and business cycle facts, they also can explain labor market outcomes.

- Bottom line II: many of the issues raised in response to the DMP model and to the rare disaster framework also apply here.
TIME-VARYING RARE DISASTER RISKS CAN EXPLAIN LABOR MARKET OUTCOMES

Hiring cost

\[ \frac{\kappa_t}{q(\theta_t)} = \mathbb{E}_t \sum_{\tau=1}^{\infty} (1 - s)^{\tau-1} M_{t,t+\tau} (Z_{t+\tau} - W_{t+\tau}). \]

Two puzzles in macro-labor literature:

1. LHS \((\theta_t)\) not volatile conditional on change in \(Z_t\) (Shimer puzzle).
   - Solution in this paper: impose wage rigidity.

2. LHS \((\theta_t)\) unconditionally uncorrelated with \(Z_t\) (productivity-tightness disconnect).
   - Solution in this paper: disaster probability shocks which affect both expectations of future \(Z\) and the SDF without going through current \(Z\).
   - Minor quibble: \(Z_t\) is marginal revenue product, not true labor productivity.
Notes: Data are quarterly from 1951 to 2013. Model implied curve is a quarterly sample with length 10,000 years from the stationary distribution. All values are log deviations from an HP trend with smoothing parameter 10.5.
DMP issues that apply here

- Wage stickiness really important quantitatively.
- Solution here is to externally impose some wage stickiness:
  \[ W_t = \nu W_t^N + (1 - \nu) W_t^I, \quad \nu = 0.05. \]
- Calibration target for wage rigidity does not distinguish between wages of existing and new hires.
- In standard DMP model, wages of new hires relevant margin for hiring.
- Some evidence (Pissarides 2009, but see Gertler, Huckfeldt, Trigari 2015 for alternative view) of much higher wage flexibility of new hires than ongoing matches.
- Rigid wages of existing matches relevant here for volatility and cyclicality of dividends and equity returns, similar to Schoefer (2015).
Rare disaster issues that apply here

- How robust are quantitative results to small changes in parameters governing disaster probability or severity?

- Movements in disaster probability very small. Essentially impossible to confirm ex post.

- Slightly less bold claim for paper: joint movements in risk premia and risk free rates consistent with the data sufficient to generate volatile unemployment.

- Could calibrate disaster probability process to asset prices and then examine implications for unemployment rather than the reverse.

- More conditional correlations: e.g. risk free rate.

DISTRIBUTION OF RARE DISASTER PROBABILITIES
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## Quantitative Success

Table 6: Business Cycle and Financial Moments

<table>
<thead>
<tr>
<th></th>
<th>$\mathbb{E}[\Delta c]$</th>
<th>$\mathbb{E}[\Delta y]$</th>
<th>$\sigma(\Delta c)$</th>
<th>$\sigma(\Delta y)$</th>
<th>$\mathbb{E}[R - R_b]$</th>
<th>$\mathbb{E}[R_b]$</th>
<th>$\sigma(R)$</th>
<th>$\sigma(R_b)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data</td>
<td>1.97</td>
<td>1.90</td>
<td>1.78</td>
<td>2.29</td>
<td>5.32</td>
<td>1.01</td>
<td>12.26</td>
<td>2.22</td>
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<tr>
<td>Simulation 50%</td>
<td>2.16</td>
<td>2.16</td>
<td>2.28</td>
<td>2.47</td>
<td>6.66</td>
<td>3.64</td>
<td>19.78</td>
<td>3.83</td>
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<tr>
<td>Simulation 5%</td>
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<td>1.79</td>
<td>1.59</td>
<td>1.71</td>
<td>-0.02</td>
<td>0.06</td>
<td>11.75</td>
<td>0.87</td>
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<tr>
<td>Simulation 95%</td>
<td>2.51</td>
<td>2.54</td>
<td>3.44</td>
<td>3.72</td>
<td>20.39</td>
<td>4.96</td>
<td>33.94</td>
<td>12.50</td>
</tr>
<tr>
<td>Population</td>
<td>1.63</td>
<td>1.63</td>
<td>6.85</td>
<td>6.89</td>
<td>13.32</td>
<td>1.22</td>
<td>38.97</td>
<td>12.19</td>
</tr>
</tbody>
</table>

Notes: $\Delta c$ denotes log consumption growth, $\Delta y$ log output growth, $R$ the unlevered equity return, $R_b$ the government bill rate. All data and model moments are in annual terms. We simulate 10,000 samples with length 60 years at monthly frequency and report quantiles from 53% of simulations that include no disaster realization. Population values are from a path with length 100,000 years. Returns and growth rates are aggregated to annual values.
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PRODUCTIVITY VERSUS DISCOUNTS

- Time-varying disaster risk introduces two effects:
  1. Present value of worker’s expected output disconnected from current productivity, allowing unemployment to move independent of current productivity.
  2. Discount rates fluctuate with disaster probability.

- Important to distinguish these effects.

- Useful exercise: report results from simulations with time-varying disaster risk and tightness-insulated wage but no risk aversion.
Summary

- Nice exposition.

- Quantitative success.

- Little to change priors:
  1. If you were skeptical of wage rigidity solving Shimer puzzle...
  2. If you were skeptical of rare disasters...