Unemployment and Business Cycles

Lawrence J. Christiano  Martin S. Eichenbaum  Mathias Trabandt

Discussed by Jaroslav Borovička (NYU)

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The building of ‘medium-sized’ DSGE models

**Actors**

- households
- firms: final goods, intermediate goods, retailers, wholesalers, ...
- financial sector
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- sticky prices
- sticky wages
- financial constraints
- adjustment costs (capital, investment)
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Aim of the paper

- Standard NK models often use the assumption of (Calvo-type) wage stickiness.
- This is unappealing for many reasons...
  - “These models cannot be used to examine some key policy issues as the effects of an extension of unemployment benefits.”
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- **DMP search framework** more attractive but replacement ratios too high and \( u/\nu \) not volatile enough (‘Shimer puzzle’)


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  - "These models cannot be used to examine some key policy issues as the effects of an extension of unemployment benefits."
- DMP search framework more attractive but replacement ratios too high and $u/v$ not volatile enough (‘Shimer puzzle’)
  - Incorporate alternating offer bargaining in the style of Hall and Milgrom (2008).
Outline

- Summary of the new bargaining mechanism
- Displacement cost and value of unemployment
- Labor as an asset and the pricing of risk
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Exogenously sticky wages — unappealing
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DMP with standard Nash bargaining

\[ J_t = \frac{1 - \eta}{\eta} (V_t - U_t) \]

\( J_t \) value of a match to the firm, \( V_t \) value of a match to the worker, \( U_t \) value of unemployment

\( \eta \) bargaining power of the worker
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**Alternating offer bargaining** *(Rubinstein (1982), Hall and Milgrom (2008))*

\[ J_t = \beta_1 (V_t - U_t) - \beta_2 \gamma + \beta_3 (\vartheta_t - D) \]

- \( \vartheta_t - D \) current period surplus for the worker
- \( \beta_1, \beta_2, \beta_3 \) functions of parameters \( \delta, M \)
- \( \delta \) probability of negotiation breakdown, \( M \) \# of bargaining periods, \( \gamma \) cost of posting a new wage offer in a subperiod
Parameterization of the bargaining mechanism

Alternating offer bargaining (Rubinstein (1982), Hall and Milgrom (2008))

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- Three terms, three parameters \((\delta, M, \gamma)\) — not very restrictive.
  - Nash solution nested in the limit as \(M \to \infty\).
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- How are the parameters determined?
- Three terms, three parameters \((\delta, M, \gamma)\) — not very restrictive.
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- In the paper, the authors use \(\delta = 0.3\%\), \(M = 60\), \(\gamma\) is a slowly moving process cointegrated with stochastic growth.
  - \(\delta\) and \(\gamma\) estimated using macro data.
  - But it still seems quite arbitrary from the micro-structure perspective (despite the fact that they provide some plausibility checks).
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Displacement cost

Hagedorn and Manovskii (2008) are able to resolve the Shimer puzzle when they set the replacement ratio $D/w$ very high.

- Here, the replacement ratio is more reasonable (67%)
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But the replacement ratio is not the only component of displacement cost!

- What matters is the value of unemployment $U_t$ relative to value of employment $V_t$ to the worker.
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- The displacement cost are very low compared to empirical evidence

$$\text{model } \frac{U}{V} = 0.9985 \quad \text{or} \quad \frac{0.4}{0.84} = 48\% \text{ of quarterly wage}$$

- Let’s look at some empirical evidence (Davis, von Wachter)
Average earnings loss as a percent of predisplacement earnings

Source: Authors’ calculations.

a. In each panel the curve labeled “In recessions” shows average outcomes for workers displaced in recession years from 1980 to 2005, and the curve labeled “In expansions” shows average outcomes for those displaced in expansion years in that period. When a given displacement year straddles recession and expansion periods, that year’s values are apportioned according to the number of months in each period (see the text for further details). Displaced workers are men 50 or younger who separate from their main job in a mass-layoff event and who have at least 3 years of prior job tenure. All averages are estimated using administrative data on W-2 earnings (following von Wachter and others 2011) and include observations with zero earnings.
Davis, von Wachter (2011) — evidence from mass layoffs

Source: Social Security Administration data, Bureau of Labor Statistics data, and authors’ calculations.

PDV of earnings loss over 20 years
(years of pre-displacement earnings)

Unemployment rate (percent)
Table 4. Present Value Income and Earnings Losses Associated with Job Loss in the Basic Mortensen-Pissarides Model

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- Range of mean PDV income losses over five aggregate states:
  - Basic MP model version: 0.20 to 0.22
  - Nash version, standard calibration: 0.044 to 0.047
  - Nash version, Hagedorn and Manovskii (2008) calibration: 0.20 to 0.23

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- 99th-percentile income loss:
  - Basic MP model version: 2.18
  - Nash version, standard calibration: 0.66
  - Nash version, Hagedorn and Manovskii (2008) calibration: 2.20

- This paper is a model of the cycle — should capture the impact of cyclical unemployment.
Displacement cost — summary

- This model generates reasonable replacement ratios for unemployment.
- But total cost of displacement are way too low.
  - And this is essentially in terms of mean wages, without any substantial risk adjustment.
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  - **Why**: most labor market policies are about the insurance–efficiency tradeoff.
  - **Problem**: Pushing apart $U_t$ and $V_t$ reduces the volatility of labor market flows in many models.
  - Tradeoff between cross-sectional dispersion and time series for flows (*Hornstein, Krusell, Violante (2011)*).
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  - incumbents vs new workers (*Haefke, Sonntag, van Rens (2013), Bils, Chang, Kim (2013)*)

- **Risk**
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Asset pricing side of the labor market model

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  - Impose structure of risk and preferences that would make the model consistent also with asset pricing facts.
  - Firm valuations fluctuate a lot \implies \text{so should the value of a marginal worker for a firm.}
  - Potential for high fluctuations in labor market flows, even with a ‘high-surplus’ calibration.
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  - Potential for **high fluctuations in labor market flows**, even with a ‘high-surplus’ calibration.
- Layoffs and unemployment also plausibly introduces substantial **uncertainty**
  - robustness, ambiguity aversion — very potent in asset pricing
Asset pricing side — issues

- Loglinearizations will not work anymore.
  - no risk adjustments
  - other solution methods needed (higher-order (e.g., Borovička and Hansen (2013), Bianchi, Ilut, Schneider (2013)) or non-perturbation-based)
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- That may not be such a bad idea even without the asset pricing considerations . . .
  - Petrosky-Nadeau and Zhang (2013): an accurate solution of a Hagedorn–Manovskii type specification with small surplus fails to explain the Shimer puzzle.
Conclusion

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- These issues seem to be more important than the choice of bargaining mechanism but there may be complementarities.
  - and of course, there is always the issue of computational feasibility.
- Then we will be closer to being able to say: “These models cannot can be used to examine some key policy issues as the effects of an extension of unemployment benefits.”