Unemployment benefits, precautionary savings and demand

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Outline

1. Introduction
2. Model
3. Results
4. Conclusion
Introduction

Content of paper

Treatment of unemployment benefits in DSGE models

- Unemployment benefits are replacement income
- Neo-classical economics:
  - Complete markets: unemployment is insured away
  - Raise alternative value to work
  - Raise wage demands
  - Reduce employment, output and growth
  - Lower benefits are positive supply shock
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  - Reduce employment, output and growth
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Heterogeneous agent economics:

- Potentially only source of income
- Some optimal level of UB exists

Relevant for policy: labour market reforms in crisis times
Literature review

- Representative agent general equilibrium model
  - Limited impact on agent’s utility
  - UB to adjust to Hoisos condition (Moyen and Stähler, 2010)

- Microeconomic theory:
  - Tradeoff between consumption smoothing and job search incentive

- Heterogeneous agents in general equilibrium
  - Labour demand effect important
  - Pro-cyclical benefits (Krusell et al., 2010; Mitman and Rabinovich, 2015)
  - Inefficient tightness: UB depends (Landais et al., 2015)
  - Portfolio choice and volatility: larger optimal benefits (Den Haan et al., 2015)
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Solving heterogeneous household models

- Problem: very large number of state variables
- Approximative numerical solution (Krusell and Smith, 1998)
- This paper uses Challe et al. (2015)
  - One large employed family sharing assets
  - Agent loosing job takes assets and consumes these
  - When out of assets only unemployment benefits
  - Upon job finding full member of employed family
    \[\Rightarrow\] Limited number of states
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Contribution of the paper

1. Investigate unemployment benefit reduction in standard New Keynesian model with heterogeneous households
2. Derive Nash wage bargaining equilibrium
3. With and without lower interest rate bound
Model features

- Standard New Keynesian model elements
  - Cobb-Douglas production function with capital and labour
  - Quadratic investment adjustment cost
  - Calvo (1983) price stickiness
  - Taylor rule, potentially lower bound
  - Closed economy

- Search and matching labour market
  - Fixed separation rate, vacancy posting cost, matching function
  - No leisure, only extensive margin
  - Unemployment benefits as replacement wage
  - Nash bargaining for wages by union weighing value functions by all workers
  - Real wage rigidity

- Heterogeneous households following Challe et al. (2015)
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Heterogeneous households

- Capital owners invest, hold asset counterposition for workers
- All employed workers in one family sharing assets
- Upon job loss worker takes his share in assets into unemployment
- Borrowing constraint: unemployed only have assets and benefits ⇒ Precautionary savings
- Consume assets quickly: could find a job again
  \[MU(C_{eu}) = \beta r[\nu MU(C_e) + (1 - \nu) MU(C_u)]\]
- Upon job find immediately full member of employed family
- Only 3 states
  - Employed
  - Unemployed, consuming assets
  - Unemployed without assets
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Model key element

- Intertemporal saving decision by workers ($\lambda$ marginal utility of consumption)

\[
\frac{\lambda_{e,t+1}}{\lambda_{e,t}} = \frac{1}{\beta w r_t} \frac{1}{1 + s_{t+1} \left( \frac{\lambda_{eu,t+1}}{\lambda_{e,t+1}} - 1 \right)}
\]  

(1)

Key mechanism

Rise in probability to lose job (s) and fall in replacement wage (meaning lower $C_{eu}$) raise saving
Lower unemployment benefits
  \[\rightarrow\] wage falls

Model with and without complete markets

Lower interest bound (occbin toolkit by Guerrieri and Iacoviello, 2015)
  \[\rightarrow\] let interest rate fall by 0.4 pp
No lower bound

(a) Complete markets  
(b) Incomplete markets
Lower interest bound

(a) Complete markets

(b) Incomplete markets
Unemployment benefits are important source of income
Model should take this into account, abstracting from complete markets
Effect of unemployment benefit cut dramatically different
Future work

- Any type of labour market policy change affects precautionary saving
- Time-varying borrowing constraint
- Asset price variable
- Imperfect markets changes wage-employment adjustment balance in bargaining framework


## Key calibration

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumption loss of newly unemployed</td>
<td>20 %</td>
</tr>
<tr>
<td>Borrowing limit</td>
<td>0</td>
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<tr>
<td>Intertemporal elasticity of substitution</td>
<td>1</td>
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<tr>
<td>Habit persistence</td>
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<tr>
<td>Replacement wage</td>
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<tr>
<td>Probability going into unemployment</td>
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<tr>
<td>Price stickiness</td>
<td>0.8</td>
</tr>
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<td>Interest rate inertia</td>
<td>0.8</td>
</tr>
</tbody>
</table>