Discussion of “Challenges for New Keynesian Models with Sticky Wages” by Susanto Basu and Christopher House

Handbook of Macroeconomics

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Summary

Very nice paper that can be split into two parts:

1. Real wages likely much more procyclical than apparent from average hourly earnings (AHE)
   - Composition bias: Bils (1985); Solon, Barsky, and Parker (1994)
   - New hires: Pissarides (2009); Martins, Solon, and Thomas (2012); Haefke, Sonntag, and van Rens (2013)
   - User cost of labor: Kudlyak (2014)

2. What are implications of procyclical real wages for DSGE models?
   - Christiano, Eichenbaum, and Evans (2005): sticky wages key to understanding dynamic responses to monetary policy shock
More Specifics

- Augment CEE (2005) VAR with new hire real wage and user cost of labor
  - Both significantly procyclical after policy shock; average real wage not
- Augment CEE (2005) DSGE model to distinguish between allocative wage, new hire wage (smoothed version of allocative wage), and average wage (combination of new hire wage and lagged average wage); also allow for composition bias
  - Nominal allocative wage sticky a la Calvo; new hire and average wage just measurement constructs
  - Interpret allocative wage in the model as Kudlyak’s (2014) user cost
- Can match responses of user cost, new hire real wage, and average real wage to policy shock if:
  - Wages relatively flexible, prices very sticky
  - “Separation rate” low enough
My Discussion

- Will take idea that economically relevant real wage is quite procyclical as given
- Want to explore implications in prototypical DSGE model
- Whereas they focus on conditional moments, I will explore unconditional moments through the lens of “wedges” and markups (Bils, Klenow, and Malin, 2014)
- If relevant real wage is quite procyclical, to make model consistent with these moments, need:
  - Relatively flexible wages, very sticky prices. Just as in their paper
  - Small labor supply shocks
- How to justify very sticky prices with micro data on price-setting? Strategic complementarity
Labor Wedge

- Wedge between marginal product of labor and marginal rate of substitution. In logs

\[ \theta_t = mpl_t - mrs_t \]

- Highly volatile (volatility relative to GDP 1.3) and very countercyclical: (correlation with GDP -0.7)
Decomposing Wedge

- Karabarbounis (2014): decompose wedge into household and firm side of labor market
- Wage markup:
  \[ \theta_{1,t} = w_t - mrs_t \]
- Price markup:
  \[ \theta_{2,t} = mpl_t - w_t \]
- Labor wedge is then:
  \[ \theta_t = \theta_{1,t} + \theta_{2,t} \]
Cyclicality of Wedges

In data, $mrs_t$ is very procyclical, while $mpl_t$ is either procyclical or acyclical depending on sample.

Measured with AHE, $w_t$ is acyclical $\Rightarrow$ wage markup very countercyclical, price markup either procyclical or acyclical (Nekarda and Ramey, 2013).

All cyclicality of labor wedge comes from wage markup.

<table>
<thead>
<tr>
<th></th>
<th>Correlation w/ Output</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1948-2014</td>
</tr>
<tr>
<td>Wedge</td>
<td>0.70</td>
</tr>
<tr>
<td>Wage markup</td>
<td>-0.80</td>
</tr>
<tr>
<td>Price markup</td>
<td>0.31</td>
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</tbody>
</table>
Economic Sources of Markups

- Price markup over marginal cost
  - Time-varying desired markups
  - Sticky prices
- Wage markup over the MRS
  - Isomorphic to preference shock to disutility from labor
  - Time-varying distortionary labor tax
  - Sticky wages
- If wage markup drives all movements in labor wedge, models will want:
  - Sticky wages, with sticky prices relatively unimportant, e.g. Christiano, Eichenbaum, and Evans (2005)
  - Volatile labor supply shocks, e.g. Smets and Wouters (2007)
Medium Scale DSGE

- Investment and capital accumulation
- Sticky prices and wages
- Variable capital utilization
- Habit formation
- Six shocks: productivity, investment, labor supply, discount factor, gov. spending, monetary
- “Standard” parameter values: prices and wages have three quarter mean durations
- Investment, labor supply, and productivity shocks explain bulk of output movement
IRFs

Prod

Invs

Discount Factor

Labor Supply

Gov

Monetary

\[ \gamma \]

\[ w \]
Model and Data Moments

<table>
<thead>
<tr>
<th>Moment</th>
<th>Model</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \rho(Y_t, w_t) )</td>
<td>0.15</td>
<td>0.14</td>
</tr>
<tr>
<td>( \rho(Y_t, \theta_t) )</td>
<td>-0.89</td>
<td>-0.70</td>
</tr>
<tr>
<td>( \rho(Y_t, \theta_{1,t}) )</td>
<td>-0.91</td>
<td>-0.81</td>
</tr>
<tr>
<td>( \rho(Y_t, \theta_{2,t}) )</td>
<td>0.45</td>
<td>0.31</td>
</tr>
</tbody>
</table>

- Model fits well if real wage measured by AHE
  - Real wage roughly acyclical
  - All cyclicity of labor wedge coming from wage markup
  - Price markup procyclical
Implications of More Procylical Real Wage

- Bils, Klenow, and Malin (2014): economically relevant real wage is very procyclical, price markup at least as important as wage markup in explaining cyclicality of labor wedge
- How would one generate that in this DSGE model?
- Ideas:
  - More flexible wages
  - Smaller labor supply shocks
  - Stickier prices
Making wages flexible and/or shutting off labor supply shocks help, but:

- Limit to how procyclical you can get real wage
- If shut both off, not enough cyclicality of labor wedge

To get (i) very procyclical real wage, (ii) very countercyclical labor wedge, and (iii) both price and wage markups countercyclical, need:

- Relatively flexible wages
- Very sticky prices
- Small labor supply shocks
Challenge

- Relatively flexible wages and very sticky prices not consistent with micro data
  - Bils and Klenow (2004): prices change relatively frequently
  - Barattieri, Basu, and Gottshalk (2014): wages change relatively infrequently

- Caveat: unclear how to map BBG (2014) evidence into allocative wage adjustments; wage changes much more likely for job switchers

- Need mechanism to make prices appear very sticky in the aggregate but consistent with frequent micro adjustment – strategic complementarity
Countercyclical Target Markup

- Ad-hoc process:
  \[ \ln \mu_t^P = \ln \mu_t^{p*} - \gamma_p (\ln Y_t - \ln Y^{*}) \]

- Parameters: \( \xi_w = 0.3, \xi_p = 0.5, \gamma_p = 0.2, s_L = 0 \)

- Moments:
  
<table>
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<th>( \rho(Y_t, w_t) )</th>
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<tbody>
<tr>
<td>0.86</td>
<td>-0.77</td>
<td>-0.75</td>
<td>-0.74</td>
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- Seems promising