

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

Handbook of Macroeconomics

Eric Sims

University of Notre Dame & NBER

April 2015

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

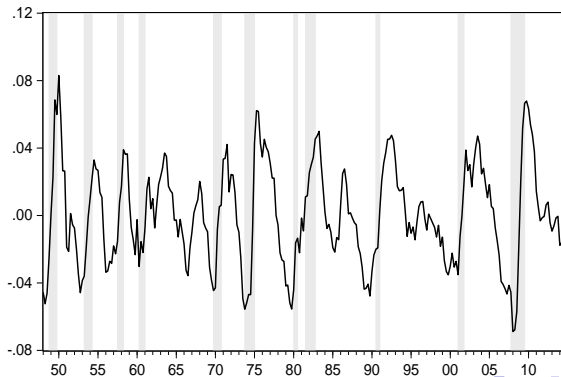
- ▶ Will take idea that economically relevant real wage is quite procyclical as given
- ▶ Want to explore implications in prototypical DSGE model
- ▶ Whereas they focus on conditional moments, I will explore unconditional moments through the lens of “wedges” and markups (Bils, Klenow, and Malin, 2014)
- ▶ 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:

$$\theta_t = \theta_{1,t} + \theta_{2,t}$$

Cyclicalilty 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 cyclicalilty of labor wedge comes from wage markup

	Correlation w/ Output	
	1948-2014	1984-2014
Wedge	0.70	0.78
Wage markup	-0.80	-0.80
Price markup	0.31	0.02

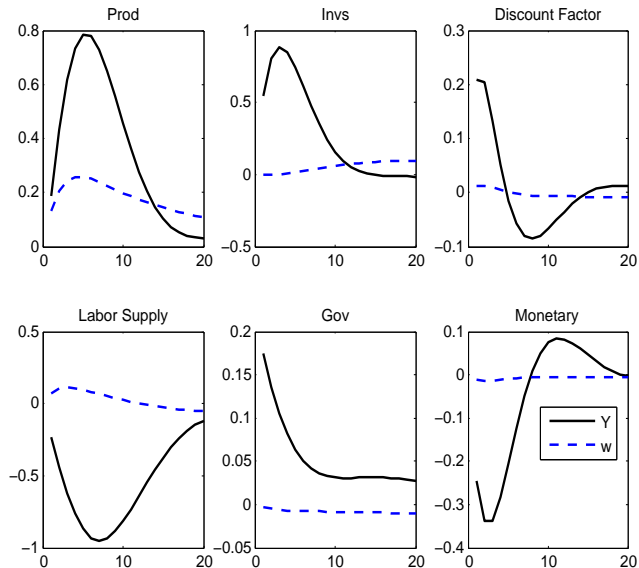
Economic Sources of Markups

- ▶ 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



Model and Data Moments

Moment	Model	Data
$\rho(Y_t, w_t)$	0.15	0.14
$\rho(Y_t, \theta_t)$	-0.89	-0.70
$\rho(Y_t, \theta_{1,t})$	-0.91	-0.81
$\rho(Y_t, \theta_{2,t})$	0.45	0.31

- ▶ 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

- ▶ Bilal, Klenow, and Malin (2014): economically relevant real wage is very procyclical, price markup at least as important as wage markup in explaining cyclicity of labor wedge
- ▶ How would one generate that in this DSGE model?
- ▶ Ideas:
 - ▶ More flexible wages
 - ▶ Smaller labor supply shocks
 - ▶ Stickier prices

Model Moments: Alternative Paramaterizations

Moment	$\bar{\zeta}_w = 0$	$s_L = 0$	$\bar{\zeta}_w = s_L = 0$	$s_L = 0, \bar{\zeta}_w = 0.3, \bar{\zeta}_p = 0.9$
$\rho(Y_t, w_t)$	0.30	0.48	0.58	0.95
$\rho(Y_t, \theta_t)$	-0.77	-0.85	-0.44	-0.87
$\rho(Y_t, \theta_{1,t})$	-0.51	-0.89	0.01	-0.85
$\rho(Y_t, \theta_{2,t})$	-0.25	0.31	-0.41	-0.82

- ▶ 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 cyclicity 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:

$$\ln \mu_t^p = \ln \mu^{p*} - \gamma_p (\ln Y_t - \ln Y^*)$$

- ▶ Parameters: $\zeta_w = 0.3$, $\zeta_p = 0.5$, $\gamma_p = 0.2$, $s_L = 0$
- ▶ Moments:

$\rho(Y_t, w_t)$	$\rho(Y_t, \theta_t)$	$\rho(Y_t, \theta_{1,t})$	$\rho(Y_t, \theta_{2,t})$
0.86	-0.77	-0.75	-0.74

- ▶ Seems promising