Discussion of

An Estimated Monetary DSGE Model with Unemployment and Staggered Nominal Wage Bargaining

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This paper

- Part of the growing literature that integrates labor market frictions into the new Keynesian model for monetary policy analysis.

- Introduces Calvo-style nominal wage rigidity in the bargaining problem, rather than using ad-hoc real wage rigidities as in Hall (2005).

- Estimates the model to determine labor market parameters for which there is not much empirical guidance.

- Overall, the model does as well as the Smets and Wouters (2003) model in mimicking time series data and wage rigidity is shown to improve the fit of the model.

Praise

- The first paper to combine Calvo-style nominal wage rigidity with Nash bargaining framework: new and not easy

- The authors do a elegant job in disentangling the key driving forces in the wage equation, and extract new economic insights about wage setting (spillover effect from aggregate wage to firm-level wage).

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- Use a number of clever shortcuts that improve tractability: instantaneous hiring of workers, hiring cost function, two-sector structure that separates hiring and price setting decision (as in B-G-G).

- Large firms in the labor sector: new hires' wages bound by firm-specific wage norm (as in Hall, 2005, and Krause-Lubik, 2007)

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- From central bankers' perspective: useful to compare the model's performance with the industry benchmark of Smets and Wouters.

Inspecting the mechanism

- Calvo-price setting yields familiar new Keynesian Phillips curve

$$\pi_t = \gamma_b^p \pi_{t-1} + \gamma_f^p \beta E_t \pi_{t+1} + \varsigma \left(\hat{p}_t^w + \hat{\varepsilon}_t^p \right)$$

- $\hat{p}_t^w$ is link to labor market.

- Variant of Mortensen and Pissarides model with GST timing

- Job creation condition

$$\frac{\kappa}{q(\theta_t)} = p_t^w a_t - w_t + \rho E_t \beta_{t+1} \frac{\kappa}{q(\theta_{t+1})}$$

  where a_t is productivity, and $\theta_t = v_t / u_t$

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- Wage equation in the standard model

$$w_t = \eta \left[p_t^w a_t + \rho E_t \beta_{t+1} \theta_{t+1} \kappa \right] + (1 - \eta) b$$

- Here, the hiring cost is κv_t. In the paper, hiring cost is $(\kappa/2) v_{it}^2 q_t^2 / n_{it-1}$

Inspecting the mechanism

- Insert wage into job creation condition

$$\frac{\kappa}{q(\theta_t)} = (1 - \eta)\left[p_t^w a_t - b\right] + \rho E_t \beta_{t+1} \left[\frac{\kappa}{q(\theta_{t+1})} - \eta \theta_{t+1} \kappa\right]$$

- Linearized:

$$\sigma \hat{\theta}_t = \frac{q(\theta)}{\kappa}(1 - \eta)p^w \left[\hat{p}_t^w + \hat{a}_t\right]$$

$$+ \rho \beta [1 - \eta s] E_t \hat{\beta}_{t+1}$$

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- From steady-state job creation condition:

$$\frac{q(\theta)}{\kappa} = \frac{1 - \rho\beta(1 - \eta s)}{1 - \eta}\left[p^w - b\right]^{-1}$$

- Would be good to see κ and q as well. Share in y?

Comparing job creation conditions

- Mortensen-Pissarides again:

$$\kappa/q_t = p_t^w a_t - w_t + \rho E_t \beta_{t+1} \kappa/q_{t+1}$$

 where $\kappa(v_t/u_t)^\sigma = \kappa/q(\theta_t) = \kappa/q_t$

- GST:

$$\kappa \frac{v_t^i q_t}{n_{t-1}^i} = p_t^w a_t - w_t + E_t \beta_{t+1} \frac{\kappa}{2} \left(\frac{v_{t+1}^i q_{t+1}}{n_t^i} \right)^2 + \rho E_t \beta_{t+1} \kappa \frac{v_{t+1}^i q_{t+1}}{n_t^i}$$

- Model has very strong amplification even without wage rigidity

  - q_t falls with aggregate v_t, so hiring costs fall in boom.
  - Expected hiring next period affects incentives twice

- How much does the hiring cost function matter?

- See autocorrelation functions...

Figure 2: Autocovariance function of GST model vs data
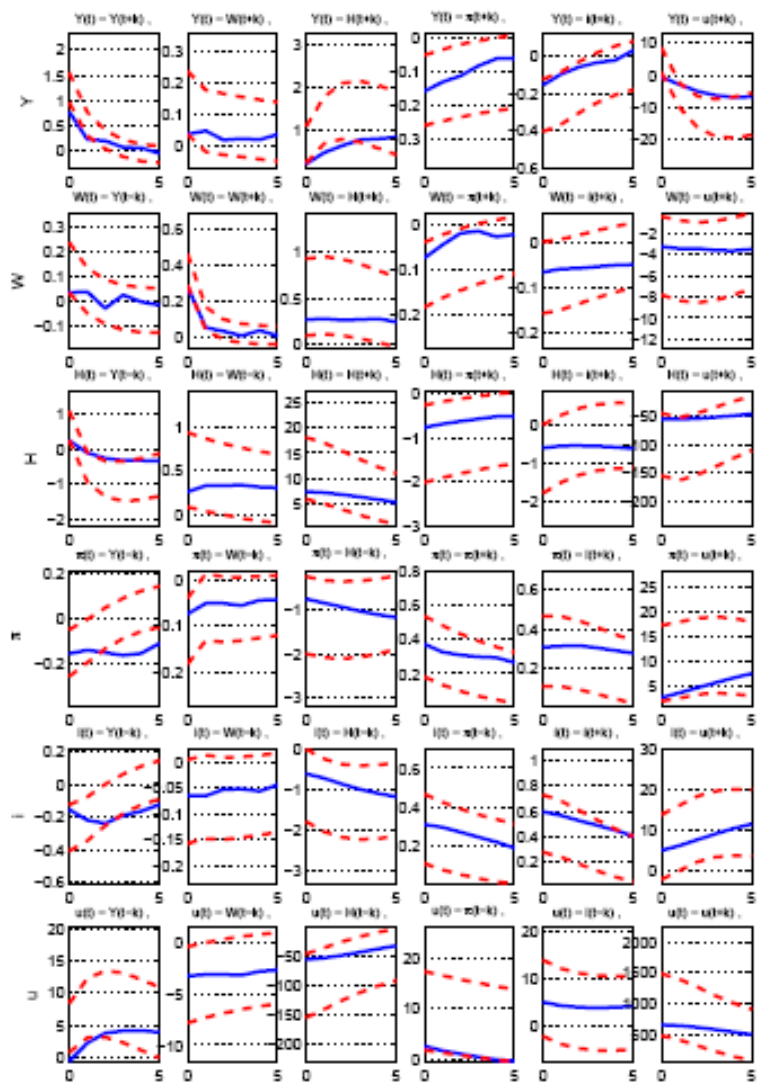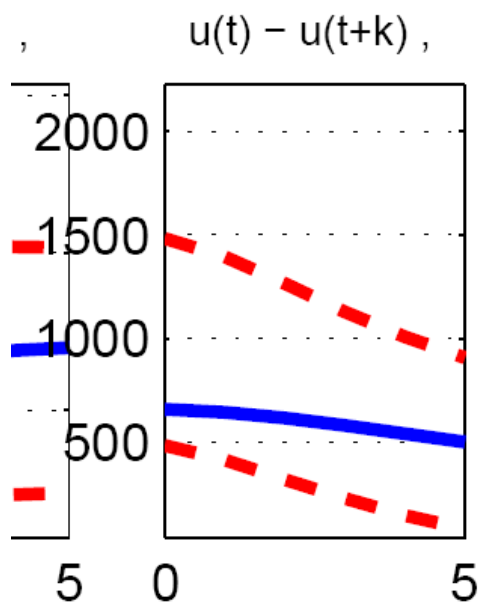
Volatility of unemployment in model with wage rigidity
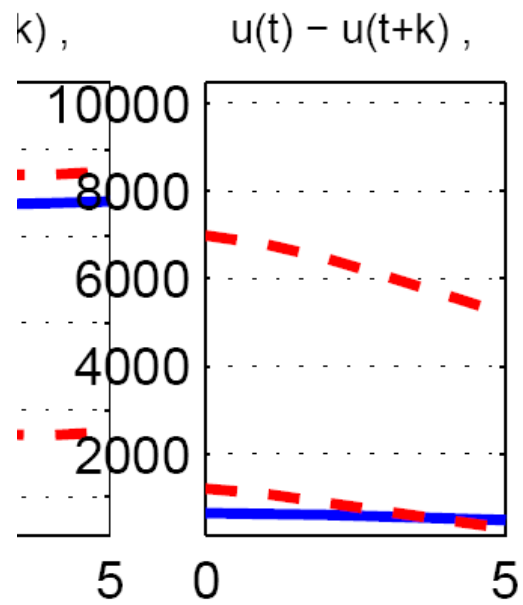
Volatility of unemployment in model without wage rigidity

Volatility of unemployment

- Shimer: volatility of unemployment too low. Here: $(\text{Shimer})^{-1}$

- The model seems to perform too well without wage rigidity

- Wage rigidity appears to *reduce* labor market volatility

- Maybe clearer if using estimated GST model and set $\lambda = 0$, rather than re-estimate.

Intensive margin: hours per worker

- Intensive margin of labor adjustment is absent in paper

- Authors argue that
  a) estimation showed that hours per worker not important
  b) volatility of hours per worker are unimportant in the data

- Point a) may be due to the excessive employment volatility generated by the hiring cost function

- Point b)...
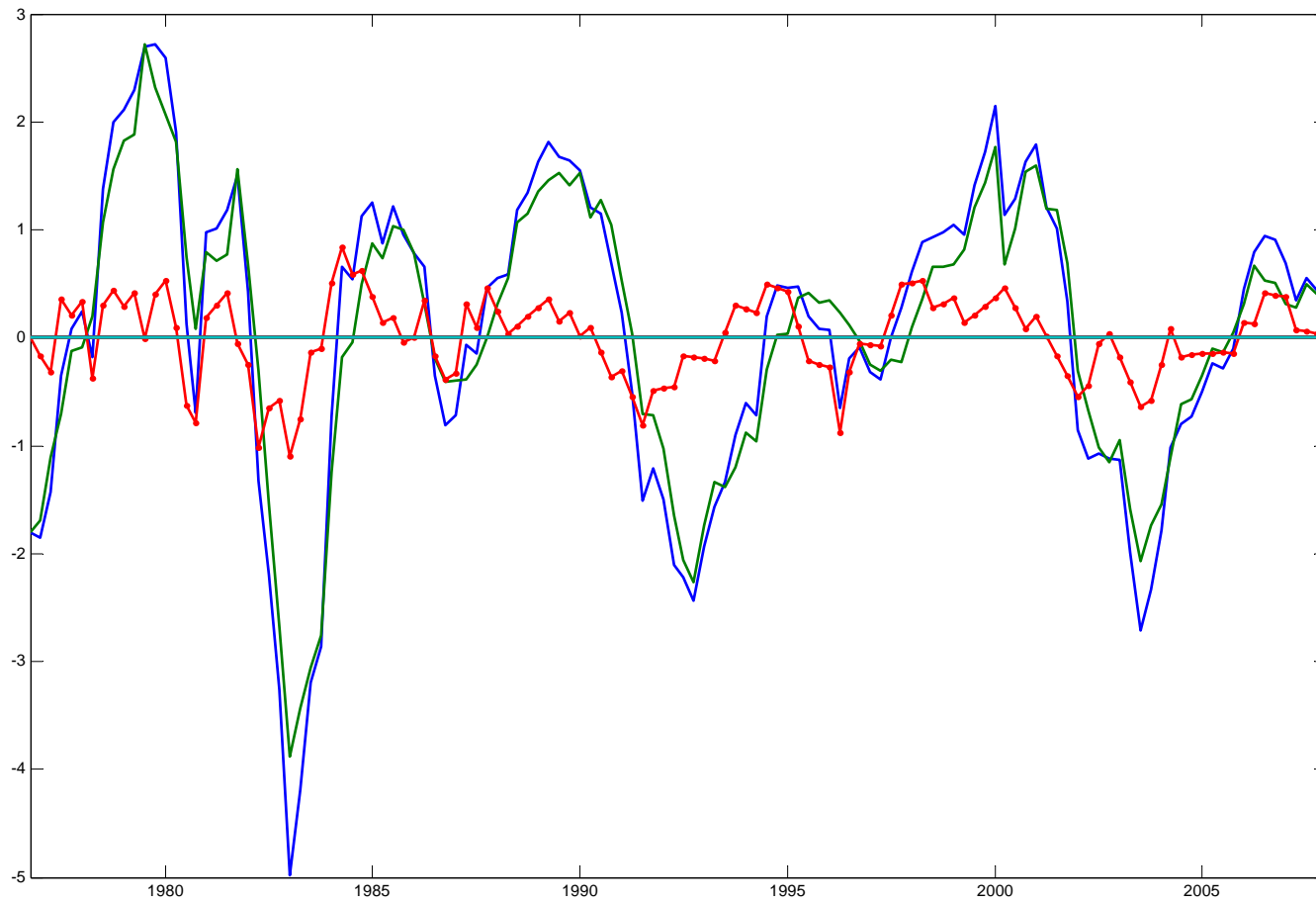
Hours and Employment, Establishment Survey (red: hours per worker, blue: total hours, green: employment)
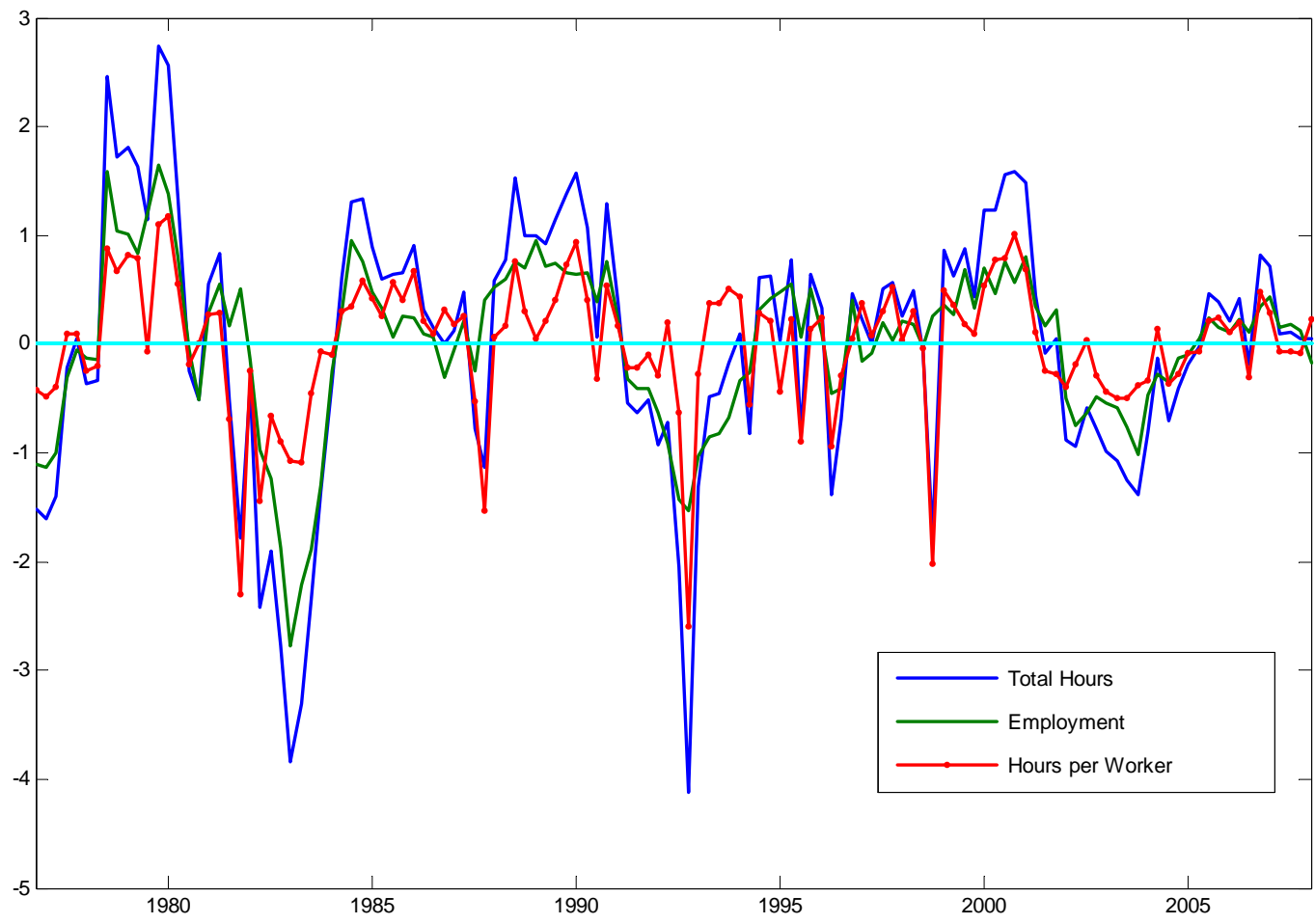
Hours and Employment, Household survey

17

Table 1: Measures of Hours Worked

	Standard Deviation (%)			Correlation
	Total Hours	Employment	Hours	(N,H)
Household survey	1.55	1.28	0.42	0.53
Establishment survey	1.19	0.74	0.61	0.57

- From Krause and Lubik (2008): hours per worker contribute at least 30%

- See also Cooper, Haltiwanger, Willis (2007): 30%

- Hours are an important margin of short-term adjustment. Europe?

Summary

- Very complex interactions in the model

- Would need to see more on

  - implied parameter values
  - the role of the hiring cost function
  - responses to all shocks in the model
  - behavior of labor market variables

- Why not estimate more/all labor market parameters?

Concluding remarks

- Real wage rigidity (indexing) is exogenous in all DSGE models used at central banks

- But it is key for trade-offs faced by central banks (Blanchard-Gali):

  - how does price setting respond to anticipated shocks (VAT)?
  - will there be 'second-round' effects after the oil price increases
  - may also play a role for firms that adjust their prices

- Modelling interaction between price setting and wage setting within the firm should deliver important results

- Risk sharing assumption: unemployment not costly for workers