Comment on: An Estimated DSGE Model for the Euro Area and the US Economy

Bruce Preston
Columbia University
and
Federal Reserve Bank of New York

Motivation

- Appear to have reasonable closed economy models for US and EURO area

- Natural question: What about their interconnections?

Key Elements

- Monopolistic competition
- Nominal and real rigidities
- Range of shocks (22 ARMA and AR shocks!!)
- Rich production structure
- Incomplete asset markets
- Trade in goods

Central Results

- Can estimate
- Model fit good on many dimensions
  - Caveat: can not explain comovement
- Historical decompositions

Remarks

- Assessing fit
- Comovement
- Identification
- Policy evaluation

Matching Moments

- Model estimated with many series in differences
  - Permit series specific trends
- Fit assessed on individually HP filtered levels: May overstate fit
- As benchmark: take trends and resulting theorectical restrictions seriously

Comovement I

- Model cannot explain comovement in consumption, output, employment and investment

- Variance decompositions reveal no transmission of disturbances across blocks

  - Justiniano and Preston (2006)

- Part of the story: “Make hay where the sun shines”

  - Correlated shocks

  - Non-traded goods

  - Does not explain low consumption correlation

Comovement II

- Part of the story: failure of uncovered interest parity
  - Exchange rate disconnect
  - Limits transmission
- Reduced form evidence: Burnside, Eichenbaum, Kleshchelski and Rebelo (2006)
- Suggests common factor/shocks originating from international asset markets drive comovement
  - Two country model ideally suited to analyzing this question

Comovement III

- Does open economy dimension help?
  - Forecasting?
  - Policy evaluation? Difficult implications
- Compare fit/forecasting performance relative to autarky

Comovement: Final note

- Where does the correlation go?

- Comovement is a general problem for DSGE models
  - Even in closed economy
  - Giannone, Monti and Riechlin (2006)

Identification

- Multiple ways to paramterize persistence
  - “Endogenous” structural components; “Exogenous” disturbance components
- 22 ARMA and AR processes
  - ARMA processes help fit
  - Is this to be viewed as a success?
- Benchmark with only AR terms would be useful
  - Permits analyzing which cross-equation restrictions problematic
  - Primiceri, Tambalotti and Schaumberg (2005), Justiniano and Preston (2006)

Identification II: Example

- May be interaction between persistence of mark up shocks, indexation and frequency of price setting in import sector

- Additional data may help resolve some problems

- With local currency pricing real exchange rate and terms of trade related according to

$$q_t = (1 - \alpha)\, s_t + \Psi_t$$

Implications

- Should we care about identification?

- Yes: can have implications for policy evaluation if impulse reponse functions differ across models

  – Canova and Sala (2006) and Fukac, Pagan and Pavlov (2006)

Example I

- Consider small open economy model – Gali and Monacelli (2005)

- Use two priors: one agnostic about endogenous and exogenous sources of persistence

- Examine estimate of the mode from 10 random starting points for each prior
  - Two modes: same value of the posterior
  - Completely different parameter estimates

Identification and Policy

	Prior 1	Prior 2
Log Post Mode	-957.22	-957.89
Estimates:		
Intertemporal subst.	1.24	0.79
Calvo H	0.92	0.40
Calvo F	0.62	0.43
Degree of Openness	0.28	0.17
Elast. of subst btw H and F	0.44	0.58
Habit	0.22	0.14
Persistence Tech	0.46	0.96
Std Dev Tech	0.63	1.26
Policy:		
Loss		
Policy Coefficient		
Interest Rates		
Inflation		
Output		
Exchange Rate		
Output Growth		

Example II

- Modes switch between capturing persistence using endogenous versus exogenous model components

- Central question: does this matter for policy design?

- Find optimal policy within class of Taylor rules to minimize sum of variance of CPI, output and interest rates. That is

$$\min \bar{W}_0(\theta_p) = var(\pi_t) + var(y_t) + var(i_t)$$

subject to

$$i_t = \rho_i i_{t-1} + \psi_\pi \pi_t + \psi_y y_t + \psi_{\Delta y} \Delta y_t + \psi_e \Delta e_t$$

Identification and Policy

	Prior 1	Prior 2
Log Post Mode	-957.22	-957.89
Estimates:		
Intertemporal subst.	1.24	0.79
Calvo H	0.92	0.40
Calvo F	0.62	0.43
Degree of Openness	0.28	0.17
Elast. of subst btw H and F	0.44	0.58
Habit	0.22	0.14
Persistence Tech	0.46	0.96
Std Dev Tech	0.63	1.26
Policy:		
Loss	2.32	3.13
Policy Coefficient		
Interest Rates	1.00	1.00
Inflation	5.11	0.01
Output	0.00	0.13
Exchange Rate	0.00	0.18
Output Growth	1.01	1.60