Discussion of Beck and Wieland
Money in Monetary Policy Design

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Preview

- Very interesting paper(s)
- Short and crisp
- A brief discussion

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- 1st paper: formalization of cross-checking
- 2nd paper: distinguishes more clearly against Gerlach-style 2PPC
- Empirical motivation: renewed interest in and lots of empirical evidence for the low frequency link between money and inflation Assenmacher & Gerlach (2006 a,b, c ....z)

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- Ensuing policy bias can be corrected through monetary analysis.
- Unlike in Gerlach's 2PPC setup, here money does not enter directly into structural relations
- Apparent advantage: no worry about justifying Δm here.

Theoretical framework again

$$\Delta v_t = -\Delta m_t + \Delta p_t + \Delta y_t$$

with standard money demand equation

$$m_t - p_t = \gamma_y y_t - \gamma_i i_t + \varepsilon_t^{md}$$

leads to

$$\Delta p^* = \Delta m^* - \gamma_y \Delta y_t^*$$

capture lowfrequency-movement of some variable x as

$$x_t^f = x_{t-1}^f + \lambda(x_{t-1} - x_{t-1}^f)$$

B&W use

$$\mu_t^f = \Delta m^f - \gamma_y \Delta y_t^f$$

$$\begin{aligned} \pi_t &= \pi^e_{t+1} + \alpha_y (y_t - y^*_t) + \varepsilon_{\pi,t} \\ y_t - y^*_t &= (y^e_{t+1} - y^{*e}_{t+1}) - \beta_r (i_t - \pi^e_{t+1} - r^*_t) + \varepsilon_{y,t} \end{aligned}$$

Expectation formation is backward looking:

$$\begin{aligned} \pi^e_{t+1} &= \pi_{t-1} \\ (y^e_{t+1} - y^{*e}_{t+1}) &= y_{t-1} - y^*_{t-1} \end{aligned}$$

And CB minimizes

$$\mathbf{E}_t \sum_{s=t}^{\infty} \delta^{s-t} (\pi_t - \pi^*_t)^2$$

which leads to the Taylor-rule

$$i^{opt} = r^* + \pi_{t-1} + \frac{1}{\alpha_y \beta_r} (\pi_{t-1} - \pi^*) + \frac{1}{\beta_r} (y_{t-1} - y^*_{t-1})$$

B&W introduce misperception through persistent bias in output gap:

$$i^{opt} = r^* + \pi_{t-1} + \frac{1}{\alpha_y \beta_r} (\pi_{t-1} - \pi^*) + \frac{1}{\beta_r} (y_{t-1} - y^*_{t-1} - bias_{t-1})$$

ECB-style cross-checking vs. 2PPC

2PPC:

$$\pi_t = \alpha_\mu \mu_t^f + \alpha_\pi \pi_{t-1} + \alpha_y (y_t - y_t^*) + \varepsilon_{\pi,t}$$

CC:

$$i_t^{CC} = i_t^{opt} + i_t^{MA}$$

and

$$i_t^{MA} = \begin{cases} i_{t-1}^{MA} + \frac{\mu_{t-1} - \pi^*}{\alpha_y \beta_r} & \text{if } \left| \mu_{t-1} - \pi^* \right| \text{too large for too long} \\ i_{t-1}^{MA} + 0 & \text{otherwise} \end{cases}$$

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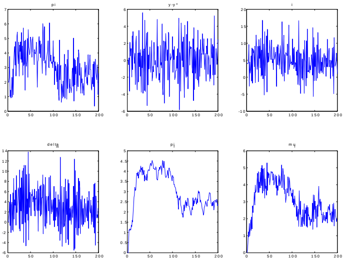
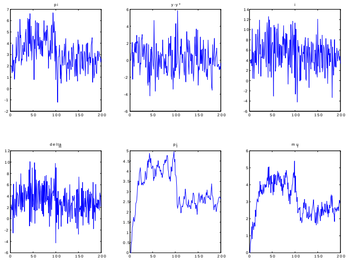
  - But that means it MUST ultimately enter a structural relation.
  - Under a full RE solution, the very fact that CB may do cross-checking (and be it for purely statistical reasons) in the first place may provide the theoretical underpinnings for putting μ into a structural relation!

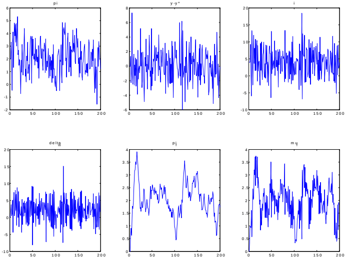


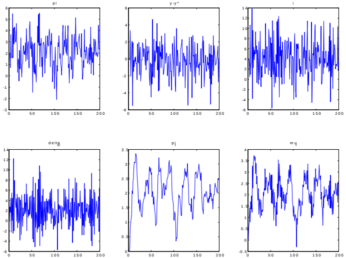


baseline model with bias:
$\sigma(\Delta p) = 1.1$, $\overline{\Delta p} = 3.1$

2PPC model with bias:
$\sigma(\Delta p) = 1.4$, $\overline{\Delta p} = 3.2$

Comments (2 cont'd): a model comparison under CC





baseline model with bias and CC:
$\sigma(\Delta p) = 1.3 \ \overline{\Delta p} = 2.09$

2PPC model with bias and CC:
$\sigma(\Delta p) = 1.4, \ \overline{\Delta p} = 2.09$

Under Cross-checking, the no-money and the 2PPC model are indistinguishable!

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- In the B&W, model money tells you something about *contemporaneous* velocity and that's why it is useful when output gap and real interest rate are estimated with error
- Is cross-checking done because we are uncertain about inputs into model or about the model itself?