

Discussion of Dees-Pesaran-Smith-Smith's
"Supply, Demand and Monetary Policy Shocks in
a Multi-Country New Keynesian Model"

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Estimate a multi-country New Keynesian model to examine the international propagation

Phillips curve

$$\tilde{\pi}_{it} = \underset{(+)}{\beta_{ib}} \tilde{\pi}_{it-1} + \underset{(+)}{\beta_{if}} E_{t-1} (\tilde{\pi}_{it+1}) + \underset{(+)}{\beta_{iy}} \tilde{y}_{it} + \varepsilon_{i,st} \quad (1)$$

Taylor rule

$$\tilde{r}_{it} = \underset{(+)}{\gamma_{ib}} \tilde{r}_{it-1} + \underset{(+)}{\gamma_{i\pi}} \pi_{it} + \underset{(+)}{\gamma_{iy}} \tilde{y}_{it} + \varepsilon_{i,mt} \quad (2)$$

IS curve

$$\tilde{y}_{it} = \underset{(+)}{\alpha_{ib}} \tilde{y}_{it-1} + \underset{(-)}{\alpha_{ir}} [r_{it} - E_{t-1}(\tilde{\pi}_{it+1})] + \underset{(+)}{\alpha_{ie}} \tilde{r}e_{it} + \underset{(+)}{\alpha_{iy^*}} \tilde{y}_{it}^* + \varepsilon_{i,dt} \quad (3)$$

where

$$\begin{aligned} y_{it}^* &= \sum_{j=0}^N w_{ij} y_{jt} \\ re_{it} &= \sum_{j=0}^N w_{ij} (e_{it} - e_{jt} + p_{jt} - p_{it}), \quad (\$1 = \pounds e_{uk}) \quad (4) \\ &= ep_{it} - \sum_{j=0}^N w_{ij} ep_{jt}, \quad \text{where } ep_{it} \equiv e_{it} - p_{it}, \end{aligned}$$

Real exchange rates

$$\tilde{r}e_{it} = \rho_i \tilde{r}e_{it-1} + \varepsilon_{i,et} \quad (5)$$

Assume covariance matrix satisfy

$$\begin{pmatrix} \Sigma_{ss} & 0 & 0 & \Sigma_{se} \\ 0 & \Sigma_{dd} & 0 & \Sigma_{de} \\ 0 & 0 & \Sigma_{mm} & \Sigma_{me} \\ \Sigma_{es} & \Sigma_{ed} & \Sigma_{em} & \Sigma_{ee} \end{pmatrix}$$

where $\Sigma_{se} = E(\varepsilon_{st}\varepsilon'_{et})$.

Data: $(\tilde{\pi}_{it}, \tilde{y}_{it}, \tilde{r}_{it}, \tilde{ep}_{it})$ of 33 countries (130 variables=4 X 33
-1 -1) for 1980:Q1 - 2006:Q3

Comments:

US\$ is numeraire \neq US policy provides nominal anchor

$e_{pit} = e_{it} - p_{it}$ is cointegrated with the US price level \rightarrow

Better using more meaningful variables to simplify argument

Define $pe_{it} = e_{it} + p_{0t} - p_{it}$: country i 's deviation from PPP against US, ($pe_{0t} = 0$). "real exchange rate" re_{it} is i 's deviation from PPP relative to the trading partner

$$\begin{aligned} re_{it} &= pe_{it} - \sum_{j=0}^N w_{ij} pe_{jt} \\ &= \left[I - \begin{pmatrix} 0 & w_{12} & w_{13} \dots w_{1N} \\ w_{21} & 0 & w_{23} \dots w_{2N} \\ \dots & \dots & \dots \\ w_{N1} & w_{N2} & w_{N3} \dots 0 \end{pmatrix} \right] \begin{pmatrix} pe_{1t} \\ pe_{2t} \\ \dots \\ pe_{Nt} \end{pmatrix} \\ &= (I - W) \cdot pe_t \end{aligned}$$

→ US real exchange rate

$$\begin{aligned} re_{0t} &= pe_{0t} - \sum_{j=0}^N w_{0j} pe_{jt} \\ &= -w'_{0t} \cdot (I - W)^{-1} re_t \end{aligned}$$

Real exchange rates may still have trend due to Balassa-Samuelson effect

• Why is the monetary policy shock of US identified while that of the other country is not? Is US monetary policy fundamentally different from the others?

Why is the impulse response of US monetary policy shock on the inflation rates so quick?

- World inflation rates:

low in 1950s and 60s

high in 1970s and early 80s

decline in late 1980s and early 90s, and stay low since

Is this due to stochastic trend or monetary policy? Difficult to separate trend and cycles

- Comparison with dynamic factor model. A general equilibrium model of multiple countries may have dynamic factors of world output and world inflation rate