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Exchange Rate, Currency and Trade
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Comments on Yang, Xu and Zhang (2022) “Re-examining RMB as An Anchor Currency”

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Summary of this paper

- Objective:
  - This paper addresses the RMB's rise as a reference currency.

    →A greater degree of co-movement of other currencies with it.

    → Major 4 groups of currencies included

    12 Asian economies: ASEAN10+Korea and Chinese Taiwan;

    6 developed economies;

    Major G20 developing countries;

    Some Belt and Road economies

Summary of this paper

- Methodology:
  - Frankel and Wei (1994, 2007)
  - The time varying parameter estimation based on state space model

$$d\ln\left(\frac{Y_{i,t}}{CHF_t}\right) = c + w(t)_{i,1} * d\ln\left(\frac{EUR_t}{CHF_t}\right) + w(t)_{i,2} * d\ln\left(\frac{JPY_t}{CHF_t}\right) + w(t)_{i,3} * d\ln\left(\frac{CNY_t}{CHF_t}\right) + w(t)_{i,4} * d\ln\left(\frac{USD_t}{CHF_t}\right) + \varepsilon(t)_i \qquad (3)$$

Time varying co-movement coefficients

$$w(t)_{i,1} = \lambda w(t-1)_{i,1} + \upsilon(t)_{i,1}$$

$$w(t)_{i,2} = \lambda w(t-1)_{i,2} + \upsilon(t)_{i,2}$$

$$w(t)_{i,3} = \lambda w(t-1)_{i,3} + \upsilon(t)_{i,3}$$

$$w(t)_{i,4} = \lambda w(t-1)_{i,4} + \upsilon(t)_{i,4}$$

Summary of this paper

- Main results:
  - 12 Asian economies: the co-movement coefficients relatively big but has declined after 2015-2016
  - 6 developed economies: the role of RMB is creasing from 2008-2009, and keep quite stable after 2015-2016
  - G20 developing economies: the increasing role of RMB can be observed since 2016
  - Some Belt and Road economies: the increasing role of RMB can be observed until 2016 in **Central and eastern Europe,** it tends to decline after that.

Comment 1

$$d\ln\left(\frac{Y_{i,t}}{CHF_t}\right) = c + w(t)_{i,1} * d\ln\left(\frac{EUR_t}{CHF_t}\right) + w(t)_{i,2} * d\ln\left(\frac{JPY_t}{CHF_t}\right) + w(t)_{i,3} * d\ln\left(\frac{CNY_t}{CHF_t}\right) + w(t)_{i,4} * d\ln\left(\frac{USD_t}{CHF_t}\right) + \varepsilon(t)_i \quad (3)$$

- How to interpret the coefficients?
  - Policy elements or market driven?

- What explains the change currency linkage of the RMB with other currency (the co-movement coefficient) ?

$W(t)_{i,3} = \alpha + \alpha_1 trade\ linkage + \alpha_2 financil\ linkage + \alpha_3$ real shock linkage+…+

Comment 2

- The solution of two stage regression for the multicollinearity problem is not appropriate.
  - Multicollinearity: de facto peg of the CNY to the US dollar

$$d\ln\left(\frac{CNY_t}{CHF_t}\right) = c + \theta_{i,1} * d\ln\left(\frac{EUR_t}{CHF_t}\right) + \theta_{i,2} * d\ln\left(\frac{JPY_t}{CHF_t}\right) + \theta_{i,3} * d\ln\left(\frac{USD_t}{CHF_t}\right) + \boxed{\omega_{i,t}} \qquad (6)$$

$$d\ln\left(\frac{Y_{i,t}}{CHF_t}\right) = c + w(t)_{i,1} * d\ln\left(\frac{EUR_t}{CHF_t}\right) + w(t)_{i,2} * d\ln\left(\frac{JPY_t}{CHF_t}\right) + w(t)_{i,3} * \boxed{d\ln\left(\frac{CNY_t}{CHF_t}\right)} + w(t)_{i,4} * d\ln\left(\frac{USD_t}{CHF_t}\right) + \varepsilon(t)_i \qquad (3)$$

$$\boxed{d\ln\left(\frac{CNY_t}{CHF_t}\right) = \omega_{i,t}}$$

Comment 2

- "Partialling out" effect of multiple regression

$$\hat{y} = \hat{\beta}_0 + \hat{\beta}_1 x_1 + \hat{\beta}_2 x_2$$

$$\hat{\beta}_1 = \left(\sum \hat{r}_{i1} y_i \right) \Big/ \sum \hat{r}_{i1}^2 ,$$

- where $\hat{r}_{i1}$ are the residuals from the estimated regression $\hat{x}_1 = \hat{\gamma}_0 + \hat{\gamma}_2 \hat{x}_2$

- Check the correlation of CNY/CHF and USD/CHF

Comment 3

- How about conduct a regional indicator?
  - Average or weighted average of co-movement coefficients
  - Country-level results is quite hard to interpret.
  - A regional indicator could reflect characteristic.

Comment 4

$$(\varepsilon_t, \upsilon_t)' \sim N\left(\begin{pmatrix} 0 \\ 0 \end{pmatrix}\begin{pmatrix} \sigma^2 & 0 \\ 0 & R \end{pmatrix}\right) \qquad (5)$$

ε_t and υ_t are respectively the random disturbance terms for the measurement equation and the corresponding state equation. Equation (5) shows that ε_t and υ_t are mutually independent, and they are subjected to a normal distribution, in which their mean values are zero, the variances are both σ^2 and the covariance matrix are R.

R should be variance of v_t