

Discussion of Pesaran, Smith & Smith  
“What if the UK had Joined the Euro in 1999?”

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## What does the paper do?

- ▶ Asks a policy question:
  - ▶ What if the UK had Joined the Euro in 1999?
- ▶ via a **counterfactual** experiment performed using a novel methodology:
  - ▶ a Global VAR

# Outline of the Discussion

1. What is a Global VAR?
  - ▶ Comparison with alternative approaches in the literature to modelling international co-movement.
2. Does the counterfactual performed here really address the policy question?

## Global VAR

- ▶ For country  $i$  estimate the VAR:

$$x_{i,t} = \alpha_i + \beta_i t + \sum_{l=1}^2 \Phi_{il} x_{i,t-l} + \sum_{l=1}^2 \Psi_{il} x_{i,t-l}^* + \Psi_{i0} x_{i,t}^* + u_{i,t} \quad (1)$$

▶ where  $x_{i,t} = \begin{bmatrix} \text{real output} \\ \text{inflation} \\ \text{real FX} \\ \text{short rate} \\ \text{long rate} \\ \text{stock prices} \end{bmatrix}$

- ▶ and where  $x_{i,t}^* = \sum_j w_{ij} x_{j,t}$ ,  $w_{i,j}$  being the trade shares.
- ▶ Global: Estimate (1) for  $i = 1, \dots, 33$ , country by country.
- ▶ SUR model: Efficient estimation country by country?

## Global VAR – continued

- ▶ A GVAR is (ignoring contemporaneous variables) a **LARGE** VAR/VECM

$$x_{i,t} = \alpha_i + \beta_i t + \sum_{l=1}^2 \Phi_{il} x_{i,t-l} + \sum_j \sum_{l=1}^2 \Psi_{i,j,l} x_{j,t-l} + \dots + u_{i,t}$$

- ▶ whose estimation is made feasible by the restrictions:

$$\psi_{i,j,l} x_{j,t-l} = \psi_{i,l} w_{i,j} x_{j,t-l}$$

- ▶ Endogeneity due to the presence of contemporaneous variables?

$$x_{i,t} = \alpha_i + \beta_i t + \sum_{l=1}^2 \Phi_{il} x_{i,t-l} + \sum_{l=1}^2 \Psi_{il} x_{i,t-l}^* + \Psi_{i0} x_{i,t}^* + u_{i,t}$$

- ▶ Example with two countries:

$$\begin{aligned} x_{1,t} &= \alpha_1 + \dots + \Psi_{10} x_{1,t} + u_{1,t} \\ x_{2,t} &= \alpha_2 + \dots + \Psi_{20} x_{2,t} + u_{2,t} \end{aligned}$$

## Comparison with the literature on int<sup>n</sup> comovement

- ▶ Dynamic factor models (Stock & Watson; Forni & Reichlin & . . . ; Kose, Otrok, & Whiteman; . . . ).
- ▶ FS<sub>structural</sub>-VAR (Stock & Watson)
- ▶ TV parameters Panel VAR (Canova & Ciccarelli)

# Performing the counterfactual experiment with a DSGE model

1. Estimate the DSGE model over the whole sample period.
2. Recover the structural shocks  $\Leftarrow$  Identification
3. Change the policy rule to “Join the Euro” – and solve the model.
  - ▶ New set of cross-equation restrictions on the VAR representation of the DSGE model.  $\Leftarrow$  Lucas' Critique
4. Feed the “old” structural shocks (except for monetary policy shocks) into the “new ” system – and compute the path for the endogenous variables.

## ... with an identified VAR

1. Estimate ...
2. Recover the structural shocks  $\Leftarrow$  Identification
3. Change the policy rule to “Join the Euro,” or alternatively, feed policy shock so that the Euro/Pound FX stays constant
  - ▶  $\Leftarrow$  Lucas' Critique? – Are the shocks “modest” by Leeper and Zha's standards?
4. Feed the “old” structural shocks ...

## ... in this paper

1. Estimate ...
  2. Pretend post-1999 data did not exist (except perhaps for US) and forecast conditioning on information up to 1998-Q4 ( $T$ )
  3. Two alternatives:
    - (1) with conditioning on  $E_t = \bar{E}$  and  $R^{UK} = R^{Euro}$  for  $t = T + h, h = 1, \dots \Leftarrow$  Hard conditioning
    - (2) or without
- ▶ Interpretation of the counterfactual:
- ▶ Under what circumstances (**shocks**) are we likely to see fixed FX rates/  $R^{UK} = R^{Euro}$ ?
  - ▶ If these circumstances materialize, are we likely to see higher output and/or lower inflation?
  - ▶ What's (love) policy got to do with it?